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The SAN JOAQUIN LIGHT & POWER MAGAZINE

FOR

CONSUMERS AND EMPLOYEES

Published monthly by the
San Joaquin Light & Power Co

Sub-Station on Mendota Plains

Vol. I April, 1913 No. 4

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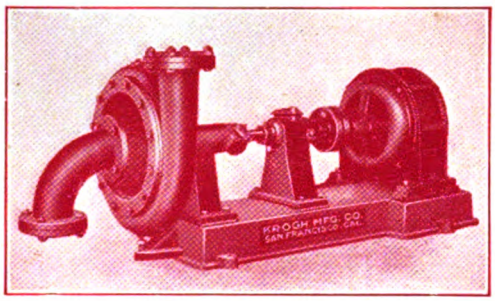

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San Joaquin Light and Power Magazine

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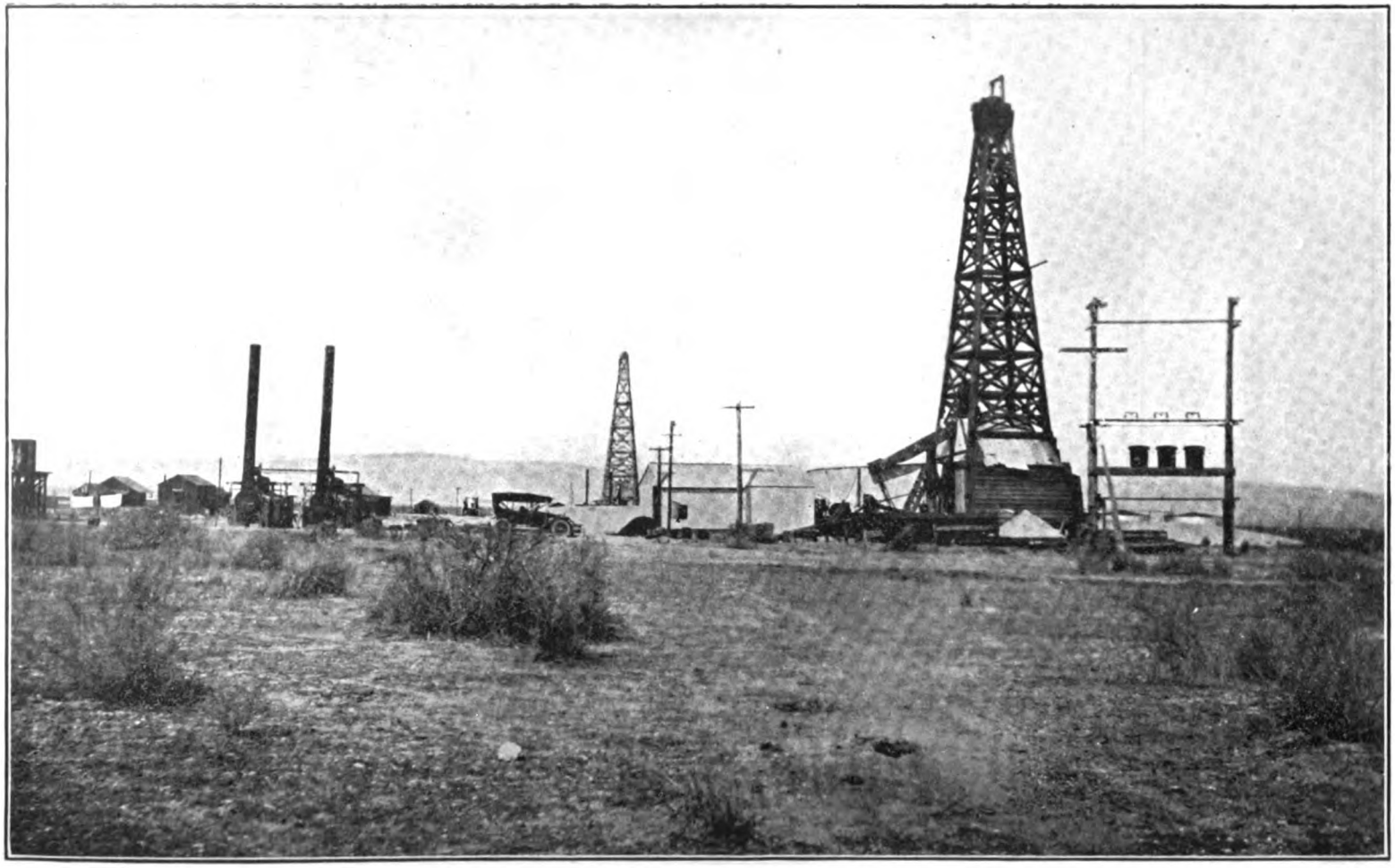

A Familiar Oilfields Scene—Battery of Boilers Discarded for Bank of Transformers

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SAN JOAQUIN LIGHT AND POWER MAGAZINE

VOL. I APRIL, 1913 NO. 4

Electrical Energy in the Oilfields

By A. EMORY WISHON

In Journal of Electr icity, Power and Gas

AFTER a year of hard work on the part of the engineers, electrical salesmen and power salesmen, the properly adapted motor for the oil fields of California was perfected to such a degree that the manufacturing company felt safe in selling it and the first customer was landed. That customer was the Good Luck Oil Company, which purchased three variable speed Westinghouse oil well motors in July, 1910. This victory still lingers fondly in the memory of the power salesmen and may yet be written as an event in the life of some great man.

The promises that the motor would do all that the engine before it had done: that the central station service would be more continuous than any individual plant and that current could be furnished by the hydro-electric companies at such a price as to allow a saving over former operating costs of 50 to 75 per cent, which, at that time, were taken with a grain of salt, are today substantiated by actual operating results of 39 oil companies that are driving by electricity 669 pumping wells.

The number of motors that will be installed during the coming year depends principally on the number that can be furnished by the electrical manufacturing companies and should, conservatively, number 1200 pumping motors, exclusive of drilling motors, compressor motors, field pumps and other forms of electrical drive now commonly used throughout the oil fields.

Of the 669 pumping wells now operated by electricity, 50 in the Coalinga field are operated by individual motors; 20 in the Coalinga field are operated by a single motor and jack. In the Midway field 304 pumping wells are operated by individual motors. In the Kern field there are 83 individual motors, and 23 jack motors operate 212 wells. There are also 6 drilling motors in operation in the different fields. To operate air compressors an additional motor capacity

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Twenty-inch Casing Being Used in Well Drilled by Electricity—Note Size as Compared to Men Seated on it

of 605 horse power is now being installed.

The orders for electrical equipment did not come with the rush that might be suggested by the above figures, for while the Good Luck motor installation was made in July, 1910, it was the middle of the summer of 1911 before any other contract of any consequence was signed. The field, at large, wanted actual operating conditions and operating costs proven, and a reasonable period of time to show what the motor would do in the heat and dust, and under the severe treatment it would receive in the oil fields was necessary.

A simple tribute was recently paid the original motor, when a party of engineers visiting the field asked of the operator:

"What have you done to this motor?" He replied: "We have oiled her."

The individual pumping motor, the first form of electric drive to be adapted to oil well operation, is the method that will predominate in the oil fields for years to come. This requires a motor to each well, but where the amount of oil to be pumped is of any great quantity, or if the rods are to be pulled often, or the well requires "agitating" occasionally, such an installation is necessary.

Constant speed, two speed, one speed variable speed, and two speed variable speed motors are now being used; the constant speed only in a few places, as it is limited in its scope of use on account of the lack of flexibility in operation. Both types of variable speed motors have the star-delta combination and give not only an absolute variable speed but 10 or 30 horse power rating. The 10 horse power or star is used in pumping; the 30 horse power or delta in pulling rods and cleaning. Both back geared and belted motors are used but the belted

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types are the more common. Each type of variable speed motor features certain points, as a matter of salesmanship, and each has its long list of admirers. Both are operating satisfactorily, and the selection between the two becomes much the same as the selection of any other standard electrical machinery—a matter largely of personal opinion—safe in either choice.

Delivery is the now all important point in the placing of the motor order, though of course first cost is always given due consideration. However, the manufacturing company and the hydro-electric companies interested have largely eliminated first cost as a counter argument, by offering to install so that the equipment is paid for out of the saving made over other forms of power previously used. Such a proposition must necessarily be founded on substantial figures.

I can best give the idea of the cost of a property electrically equipped, complete, ready for operation, by the following figures. The lease in question is a very average property, with wells located 150 feet by 300 feet apart.

Primary and Secondary Lines

14 35 foot poles	$112.00
12 Style D Crossarms	9.60
19 Style G Crossarms	11.40
36 10,000 Volt Insulators	4.68
72 2000 Volt Insulators	2.88
48 1-inch Iron Pins	9.60
60 Locust Pins	1.20
12 28-inch Cross Arm Braces	1.32
36 ½x3½ Lag Screws	.54
33 ⅝x16-inch Bolts	2.31
6 ⅝x14-inch Bolts	.39
6 lbs. ⅝ inch Washers	.30
10 Anchor Rods	7.50
10 Slugs and Washers	7.20
10 Pole Tins	.35
10 No. 855 Strain Bobs	.70
500 feet ⅜ inch Guy Wire	5.70
20 3 Bolt Clamps	4.00
5500 feet No. 8 H. D. Wire	45.39
2800 feet No. 3 H. D. Wire	73.43
2500 feet No. 4 H. D. Wire	52.80
100 feet No. 8 S. D. Wire	.80
150 feet No. 6 S. D. Wire	2.10
Cost of Delivering Material	30.00
Labor	170.00
	$553.95

Three Transformers and Installation for Six Wells

3 15 K. W. 660-440/220 V Transformers	$541.95
Type H Trans. Construct. Material	43.61
Labor	40.00
	$625.56

Installing Six 10/30 Oil Well Motors

6 10/30 Motors and Jack Shafts F. O. B. Warehouse	$3336.00
Material for Wiring In	422.88
Labor	90.00
	$3848.88

Summary

Primary and Secondary Lines	$ 553.95
3 15 K. W. Trans. and Installation	625.56
6 10/30 Motors, Complete	3848.88
	$5028.39
Average Cost per Well, Complete	$838.065

This $838 per well is generally saved in from six to ten months and after that the saving goes in to top off the regular earnings as "velvet."

The above figures are taken from an actual bill rendered to a property for labor and equipment. However, this is a small property and on the large properties, where they buy direct in large quantities and have their own organization, these figures can be cut materially.

As this was not started as a comparative cost article, I will simply state that continuity of service (eliminating great loss of production due to shut-downs) saving in boiler or engine repairs, saving in water and fuel, saving on interest of initial cost, 50 per cent saving on depreciation, the same on labor, saving on lubricating oil, etc., are a few of the points of salesmanship. However, the all convincing argument is the inspection of the books of the different oil companies that have tried all forms of power. This added with talks with the employees of the electrically operated oil properties is always effectual.

The figures shown in the following table are for the month of February, taken from 100 wells without regard to choice. The names of the companies are withheld but a visit to the field office or a personal letter to most any company will bring you parallel figures of cost:

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OIL WELL MOTOR INDIVIDUAL DRIVE PUMPING STATEMENT

From Jan. to Feb. Date 1913	Total Power Consumed K. W. H.	No. of Wells	Average K. W. H. Per Well Per Day	Total Production In Bbls.	K. W. H. per Bbl. Pumped	Av. Bbl. Daily Produced per Well	Ave. Depth of Well
30 days	3825	1	123.4	1741	2.197	56.2	3110
30 days	1720	2	27.7	870	1.977	14.0	1706
30 days	10290	3	109.3	2227	4.580	23.9	2775
30 days	8970	3	96.5	12107	0.741	130.2	2621
30 days	9975	3	107.3	17350	0.575	186.6	1103
30 days	18000	8	72.6	3898	2.023	35.9	1030
30 days	3500	1	120.1	4640	0.754	160.0	1700
30 days	7152	2	123.3	8730	0.819	151.0	950
30 days	6340	2	102.3	1085	5.843	17.5	2205
30 days	5000	2	80.6	3050	1.639	49.2	2474
30 days	8560	5	55.2	2090	4.096	13.5	1384
30 days	36575	12	98.3	85384	0.429	229.5	958
30 days	35375	12	95.0	64656	0.547	173.8	1339
30 days	8816	4	76.0	12000	0.735	103.5	900
30 days	17670	5	114.0	12845	1.376	82.9	2665
30 days	35230	11	103.3	47964	0.735	140.7	1953
30 days	2995	1	96.6	1860	1.610	60.0	2692
30 days	24240	8	101.0	41400	0.585	172.5	1040
30 days	14010	9	50.2	2869	4.883	10.3	1029
30 days	10088	4	80.4	8467	1.191	66.1	2619
30 days	4448	2	76.7	5800	0.766	100.0	900
Average	272779	100	90.92	341033	0.799	113.67	1526.58

This table gives about the best idea that can be obtained as to the power required in the operation of the oil well. However, the gravity of the oil, the amount of gas in the well, whether or not the hole is straight, and a hundred and one other factors, enter in to make one well require slightly more or less power than the neighboring well.

Since the introduction of electric drive, there has been much more attention given to the set-up of the standard rig itself, especially as to the band-wheel and walking beam bearings. Counter weights are now being used on the walking beams to work opposite the weight of the rods, and a study is being made to eliminate as far as possible the friction load that has always existed in the standard rig, thus largely reducing the power required to operate. In many instances tail pumps are connected to the walking beams, and this last winter, during the cold spell, many companies were made aware that cold weather made a material difference in the amount of power required in the operation of an oil well. Heretofore, figures have not been kept close enough by many companies to appreciate this, the oil simply having been run out of the wells and burned under the boilers, without being measured. With the integrating wattmeter, however, all the inefficiencies existing in any part of the equipment, even down to the pump 2000 feet below the surface of the ground, are brought out and placed vividly before the operator, who, having it thus called to his attention, is making a closer study of efficiency of operation.

The older wells that are more or less free from sand troubles and are waning in production, but free from water troubles, are being operated largely by jacks. The jack is a power-head, built on the theory of an eccentric that is generally situated in the middle of a group of wells and at different points on the eccentric yoke, cable lines are connected and each in turn is tied to a rocker-beam at the well-head. Motor drive has been recently introduced to operate these jacks, and the saving made here is as much, if not more, than that made in the individual oil well motor. The ordinary constant speed motor can be used to operate a jack. It is generally con-

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Transformer Installation at Property of Kern Trading & Oil Company,

nected to the jack shaft through a friction clutch, in some instances driving the friction clutch by a Morris chain drive but more commonly with the ordinary leather belt. The outfit is simple and the installation very cheap, as no special electrical apparatus is required, other than the ordinary constant speed motor.

While the current required to operate a well by a jack shows to be approximately a third as much as that required to operate the average individual motor driven well, the K. W. H. per barrel of oil pumped with a jack is as much, if not more, than that pumped by individual motors, the reason is that the jack well generally produces very few barrels of oil per day and a large part of the power is taken up on constant friction load.

OIL WELL "JACK" DRIVE PUMPING STATEMENT

1913 Time	H. P. of Motor	Total Power Consumed K. W. H.	No. of Wells	Average K. W. H. per Well per Day	Total Production in Bbls.	K. W. H. per Bbl.	Av. Daily Prod. Bbls. per Well	Depth of Well	Gravity
30	15	8352	7	39.7	3300	2.52	15.7	779	14
30	25	9048	8	37.57	3930	2.30	16.25	818	15
30	30	14212	14	31.9	10080	1.41	24	725	16
30	35	8897	8	37.06	5328	1.67	22.2	970	15
Average		40509	37	36.49	22638	1.79	20.39	808	

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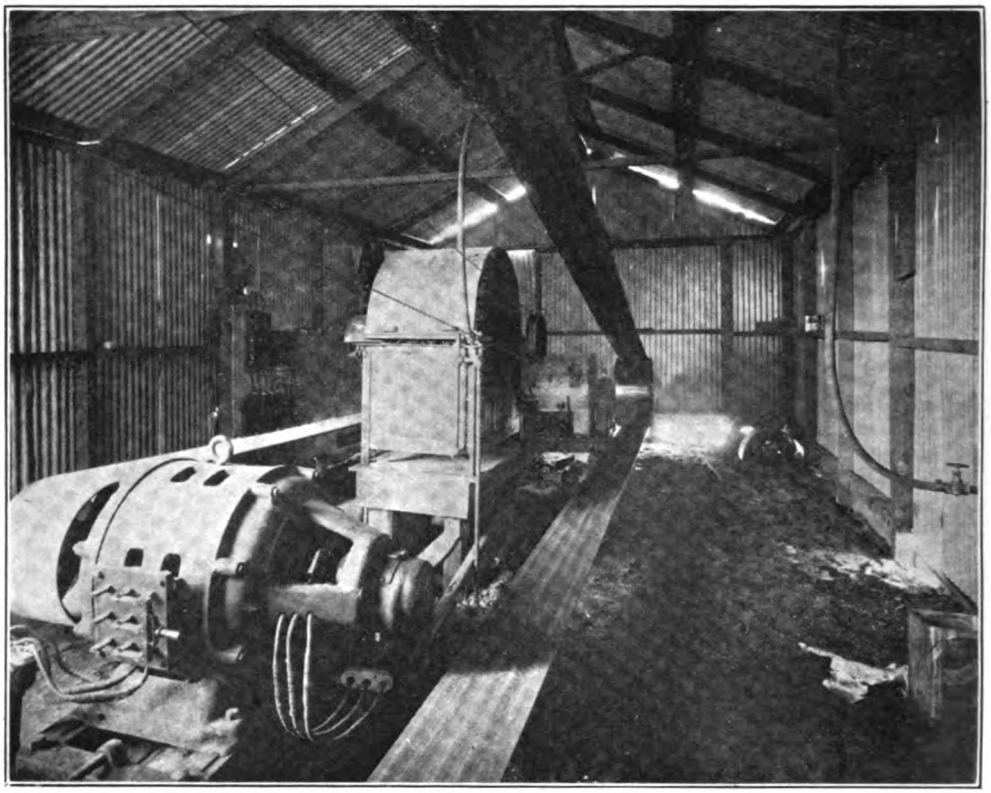

Electric Drilling Motor in Kern Trading and Oil Co. Well on Maricopa Flat

In a large part of the Kern field and scattered throughout the other fields, water has gotten into the oil sands, so that to actually produce a barrel of oil it is many times necessary to pump ten barrels of solution, and with the ordinary type of walking beam pump this is impracticable and in many cases impossible. The problem has been solved by use of the air compressor, whereby an air line is run down inside of the well and compressed air is forced to the bottom of the well, forcing the liquid to the surface and making is possible to operate wells that otherwise could not be made to pay. To electrically operate the air compressor is nothing new, the constant speed motor being used. This class of business seems to offer one of the best fields for electric power. The installation generally ranges from 100 to 400 horse power and the load is continuous—24 hours a day.

The development of the drilling motor has not advanced as rapidly as that of the pumping motor; first, because it was not seriously undertaken until nearly a year and a half after the pumping motor had been installed, and second, because the motors have cost more to develop and the duty required of them has been so severe as to make the manufacturing companies cautious in bringing more than one type of motor out at a time. However, the recent drilling motor that has been brought out seems to have solved the problem. From the very start the drilling motor proved itself to be the cheapest drive for this purpose and the advantages of such power, especially where the drilling was to be done on the frontier, where water and fuel must be hauled over

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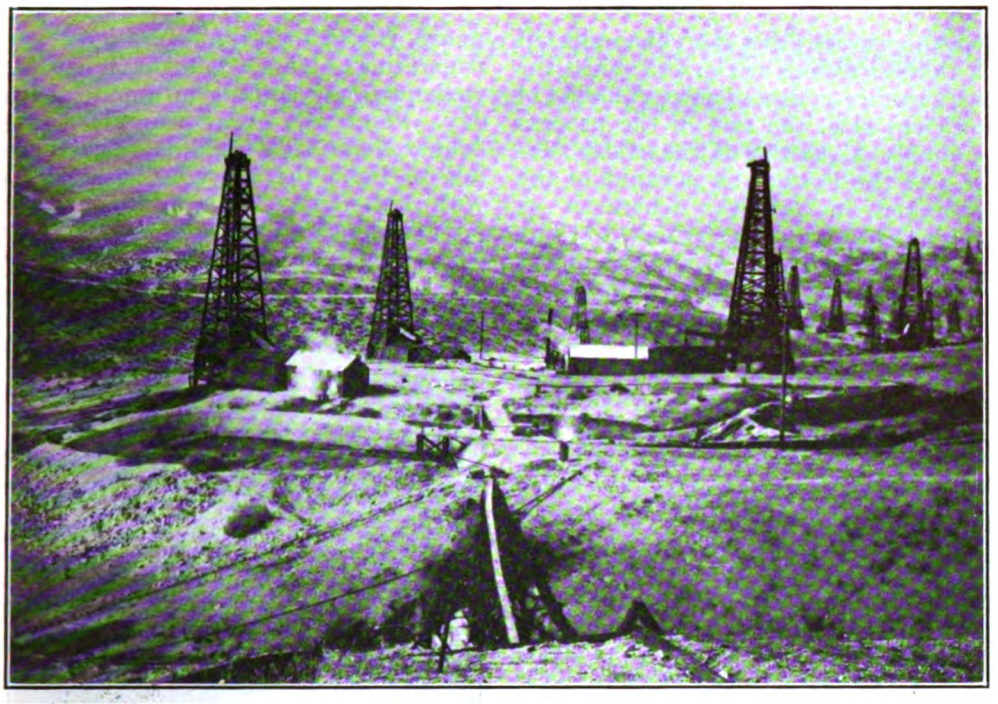

Escaping Steam on Cheney-Stimson Property Before Electricity was Installed

impassable roads, appealed greatly to the oil man. The chief objection to the earliest type of drilling motor was its inability to bring about fineness in control that is required by the driller, but at the present time several forms of control are being used. These give any desired speed and the drillers now working with the electric rig are heartily in favor of it.

Recently the General Petroleum Company drilled a well 1356 feet in 37 days, consuming only 9632 kilowatts, or at a cost of 1½c per K. W. H. The total power bill for the well was $144.48, or a fraction over $3.90 per day. The Santa Fe and several other companies have obtained similar results. At the present time the K. T. & O. Company are giving the drilling motor one of the most severe tests it could be put to, namely, the drilling of a 20-inch well. This well is being drilled in the Maricopa Flats, directly east of Kerto, and is being watched closely by all the operators in the field.

While the question of operating costs in the drilling of wells is generally not given the consideration paid to pumping, on account of the drilling process taking only a brief period of time, the saving in dollars and cents made possible by the drilling motor and the many problems that will be eliminated by its use, will necessarily make it as popular as the pumping motor within the next few months.

Another use of electricity that is becoming quite pronounced in the oil field is the electric dehydrating plant, where oil that carries finely disseminated particles of water is electrically treated, separating the water from the oil and greatly increasing its value for marketing purposes. Roughly describing it, the plant consists of cylindrical, galvanized iron tanks, in which is immersed a wire cone. The current is stepped up to approximately 10,000 volts and discharged from this cone through the oil to another electrical terminal. The high voltage and the electrolytic action collects the finely disseminated particles together by

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breaking down the fine filaments of oil that surrounds them, and when the particles are collected into globules of sufficient size, the rest of the process is simply a matter of the water settling to the bottom on account of the difference in gravity, where it is drawn off.

The following is a statement of the operating costs of a dehydrating plant, showing the cost per barrel of oil treated:

Cost, Dehydrating Plant, Dec., 1912

Barrels of Oil Treated		40,000
Barrels of Cleaned Oil Resulting		34,650
Before treatment oil averages 16 per cent wet; after treatment 2 per cent.		
Royalty for Month		$460.17
Power for Treating, Operating of Machinery, and Lights		82.28
Labor, Proportion of Gauger's Salary	$100.00	
Cost of Heating Oil, Incidentals, etc.	50.00	150.00
		$692.45
Depreciation (Cost of Plant $6600)		82.50
Total		$774.95

Cost per Barrel of Cleaned Oil

Royalty	$ .0133
Power	.0023
Labor and Expense for Bags, Heating, etc.	.0043
	$ .0199
Depreciation	.0023
Total	$ .0222

The price charged for electric power throughout the oil fields, measured on the secondary side of the field transformer, varies from 1c to 1½c per kilowatt hour, according to the number of wells operated by the company, or from $4 to $5.50 per horse power per month, graphic meter measurements.

The oil well pumping motor, the drilling motor, the air compressor motor, the jack, and the dehydrating plant are at the present time the most important users of electricity in the oil field, but the sump pump, the line pump, shop motors, motors for refrigerating plants, motors for water wells, etc., are gaining in number each day. Practically every property of the field is electrically lighted or is arranging to light the derricks and camps with electricity.

This stage of the oil game may consistently be termed the "Electric Epoch." Times have changed since 1910. Today the electrical salesman listens to the oil operator's story of the motor's success, and it is indeed an inner satisfaction when he has heard it.

Twenty-inch Bit, Six Feet in Height, used in Sinking Well being Drilled by Electric Power on the Section 1, 11-23, Property of the Kern Trading and Oil Co.

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Importance of the Oil Industry to the Aggregated Industries of the State

By CHAS. P. FOX, Editor CALIFORNIA OIL WORLD

During 1912, the high line of oil production in California was touched. The yield in net barrels was 85,000,000, in round numbers, and equivalent to about 20,000,000 tons of coal or $100,000,000 of money. How important the oil business is to the aggregated industries of the state is thus readily seen, and an idea can be gained, by taking the foregoing presentation into consideration, how much farther back than now our general development would be had not oil been discovered and found in such quantities as to furnish us with the fuel necessary to carry on those lines of business requiring heat.

Presumably, a condition of society might be evolved wherein money would play no part as a medium of exchange, but that article is of supreme usefulness in the scheme of things as we experience them, and any plan or fact which brings money into a community or prevents its outflow is conceded by all too worthy of a high place among the beneficial things.

California, to progress, needs heat artificially created. Had not as much heat been created as has been profitably been made use of, the state would be, in that much, far in the rear of its present advancement. In other words, to make the progress it made last year, home fuel assisting, this community would have been compelled, without oil, to send to outside regions, British Columbia, the northwestern states, Australia, etc., the stupendous sum of $100,0000,000. Our per capita circulation would thus have been decreased about $40, and instead of being the land of particularly excellent opportunities, good wages and remunerative prices, California would be the reverse of what it is from a business standpoint. The margin now realized out of the remarkable productiveness of soil and natural equipment, would be exhausted by the drafts made by imported fuel. The "velvet" we now appropriate and expend in new enterprises, or in comfortableness and justifiably pleasurable living, would be scorched out of existence. So, while the oil business is usually regarded as the business of the oil men, it is emphatically the business of every inhabitant, the presence and continuance of which promotes the prosperity of all, the absence of which would bring about a deplorable condition of commercial affairs.

But eventually, the production of oil will cease. Our petroleum territory is the richest and most extensive yet discovered, but the stores of nature will be finally depleted. The salubriousness of our climate will never be less and the fat of the farmer's land is there to stay. With oil, the situation is different. There are only so many barrels in the ground and every barrel consumed is a barrel gone, incapable of being reproduced like the recurrence of the seasons or the nourishment obtained from crops. Although oil is very important and helpful at present, one of these days we shall be compelled to get along without it; and it gives great satisfaction to be able to assume with the best of reasons that when that time comes we shall not be forced to expend our substance in buying other people's coal for the generation of heat and power, but that the development of hydro-electric energy will have reached a stage such that whoever needs heat or power will be privileged to obtain the same by the simple process of turning a switch.

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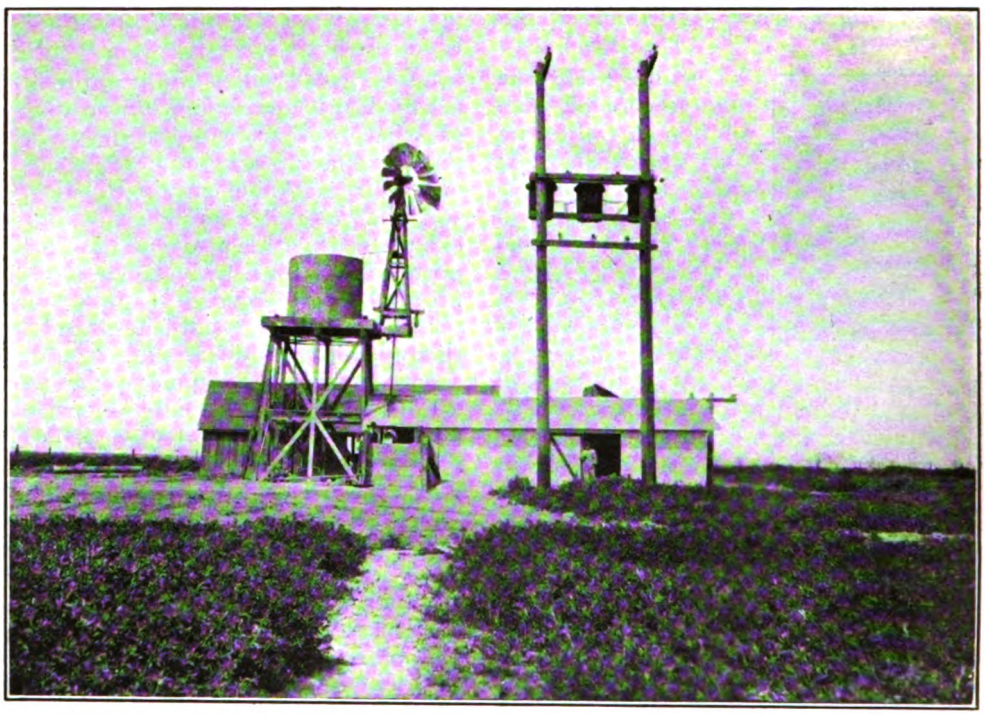
Mendota the Land of Promise—Electric Pumping Making a Country of the West Side



Pumping Plant and Well at Vall Verde Throwing 1500 Gallons a Minute

MENDOTA is truly the land of promise.

No place in the valley is capable of making a better country than the "west side" when water is put on it. And water is slowly but surely being placed there.

Only a short distance west of the town of Mendota there is an illustration of what water will do so striking one feels like kicking himself all over a ten acre lot for not having had the foresight to take advantage of a golden opportunity to purchase land when it was to be had for a few dollars an acre. Values have risen now until it would take offers of $100 or better to even get recognition from some owners. Circumstances, however, might influence others and land may be picked up at a lesser figure but it will be found only in scattered parcels.

Here is a settlement of a half dozen or more ranchers on several sections, the only green spot in the arid plains for miles and miles around. They have explored and found an underground water supply from which is being pumped virtual streams of gold. A land which lay under the sweltering sun for years and years worthless for any purpose except grazing pasture for sheep, is being transformed into the most profitable of alfalfa farms.

Of course it had been common knowledge for years that water lay under this wonderful country, because for 20 years there has been an artesian well in Mendota. An attempt was made years ago to irrigate from the artesian stratum. A well was sunk, water was obtained, and after a short period of operation the plant was abandoned as a failure because of the lack of proper facilities in that day to han-

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dle a proposition of such magnitude. The well casing was too light, the wells caved in, the confidence of the operators was shaken and they refused to put up more money to again drill and rectify the damage. With the exception of old surface wells which were pumped by mule power and used to water sheep, there were no wells in the district until comparatively recently when it became time to give more attention to pump irrigation.

Breaking Virgin Ground for the First Crop Near Mendota

The original land owners, who struggled through uncertain years of dry farming, again began to sink wells and the gas engine, the forerunner of the more modern means of pumping, gave service, far from satisfactory though it was, until a better method presented itself. With the building of the electric lines into the district, a year and a half ago, every gas engine has been supplanted by a motor. The system of continuous pumping and strip irrigation, which is made possible by the use of the motor, has been generally adopted and no finer examples of cultivation by this method can be found anywhere than is seen on the farms on the Mendota plains. The reservoir and the motor are now admitted the first essentials of the west side farmer and the new settler would no more think of breaking ground before arranging for a continuous irrigation supply than would the small boy stay away from the monkey cage at a circus.

Electric pumping is given full credit for the wonderful transition that has occurred on these plains. The most striking example perhaps is Vall Verde, the four-section tract owned by Fresno men and managed by Mr. H. A. Barkelew. Here are almost 500 acres under cultivation irrigated by two wells connection by suction and pumping by a motor throwing 1500 gallons a minute. An acre reservoir receives the outflow and from it the water is run to the particular parts of the property desired. After the alfalfa was given its first wetting this season, the water was turned into the grain fields which were just beginning to feel the need of moisture because of the shortage of rain. The result will be a bountiful crop. Under this system of irrigation, last season the Vall Verde people got seventeen sacks of barley to the acre, six cuttings of alfalfa, one and one-half tons of corn to the acre, and sold their Egyptian corn threshed for $30 a ton. Truly a wonderful performance for a country which not many years ago was generally regarded as worthless.

The Heosinger Brothers are irrigating 1420 acres with a motor and reservoir. They were among the earliest settlers in the district and had an interest in the first well put down, later sinking four wells on their present property. These were drilled to a

Second Season Alfalfa April 1st After One Irrigation

depth of about 475 feet and were pumped by a ninety horse power gas engine, until electricity was installed and since then a sixty horse power motor has been doing the work. The wells are connected by suction and the pump is throwing about 1800 gallons a minute. A very thorough system

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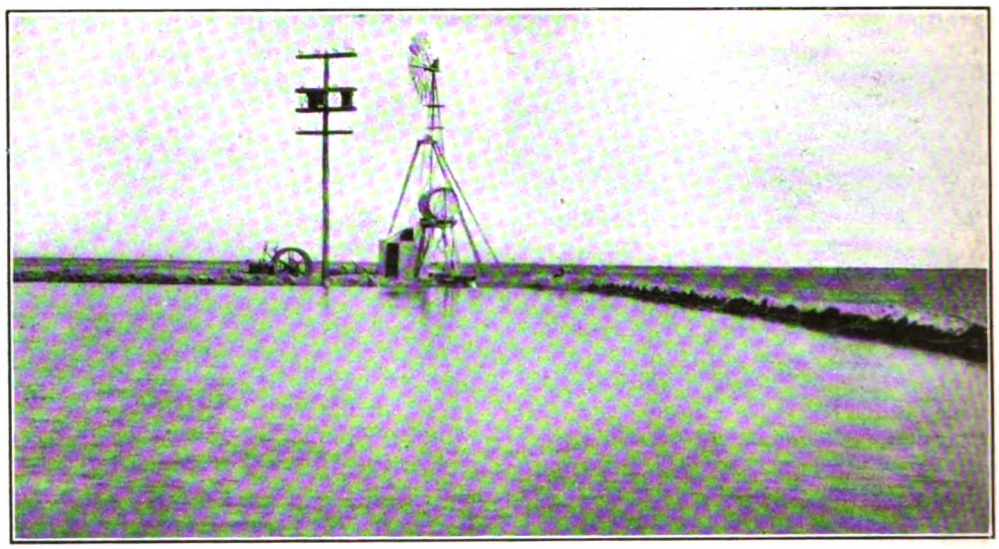
of stripping makes it possible to handle the water expeditiously and to the best advantage. Continuous pumping keeps the reservoir full and every day a different piece of the property is flooded, with the result that the entire acreage gets its share of water and a crop is insured regardless of the rains.

On section 1, 14-14, A. J. Arnadon, who formerly owned the entire piece, has disposed of two holdings and three well developed and paying farms, each under continuous electric pumping are now to be seen there. A degree of efficiency in farming has been attained on this section that is remarkable considering the short time in which development has been under way. Ceaseless running motors are the force irrigating acre after acre of alfalfa which provide feed for the dairy cows and hay for the barns.

O. W. Stearns, on section 12, is now installing an electric plant and reservoir and it is his regret that he did not do so months ago. It was on this property that the first test well was drilled years ago. A steam plant was built to operate the well and this structure now stands, a monument to the early endeavor of the men who at present are making a great success of the country. After abandoning the old well and Mr. Stearns came into possession of the land he is now developing, he drilled another well and got a fine supply of water. Contrasting the service given by his gas engine, and the motors on adjoining properties, he decided to abandon the engine and he is now anxiously awaiting the time when his motor will be in operation. Mr. Stearns is constructing a reservoir an acre in area and four feet deep. He plans to run the motor continuously and with the deep reservoir he will dispense with the service of one man about the farm. With four acre feet of water he will be able to irrigate two days and devote the third day to other duties while the reservoir is again filling.



Kollmeyer Plant Near Mendota. View Across Reservoir Showing Electric Pumping Plant, Discarded Gas Engine and Windmill

The pumping plant in Mendota has an interesting history. For a score years an artesian well in the town of Mendota told of a rich underground supply of water. In 1905 several ranchers, who had long been interested in this promising territory, formed a co-operative company to put in a well and pumping plant for the development of a large tract of land.

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They purchased sections 1 and 12 and took sections 13 and 24, all in township 14, range 14, under option. In the enterprise were Messrs. Rockwell, A. J. Voak, E. E. Crosland, O. W. Stearns, S. L. and G. E. Heisenger and one or two others They picked upon the place, which is now the Stearns ranch in section 12, as the location for their plant and three wells about 350 feet deep were drilled. A 75 horse power steam pumping plant was installed and for some time the plant threw 3000 gallons of water per minute. After a time trouble appeared. The well casing was too light and the holes caved in, putting the plant out of commission. The interested members were divided as to what to do. Some desired to redrill the holes and put down heavier casing, while others did not wish to put any more money into the plant. The decision was reached to divide the land holdings, and this was done, the Heisingers, Stearns and Arnadon taking pieces upon which they installed individual plants. Pieces of their holdings have been sold to new settlers.

There are several strata of water underlying the territory. The first real pumping level is about 400 feet or thereabouts, depending upon the fall of the land. It is from 75 to 80 feet in depth. An artesian stratum lies little less than one hundred feet deeper, beginning about 550 or 560 feet. It is from this level that the best wells have been procured.

The latest work in new development is to be done by I. D. Conger, an Iowa capitalist who recently purchased six sections on the west side. He is planning to work the southwest quarter of section 23 and is now arranging for the installation of his plant.

It is development of this kind that is making the west side "a country."

A Prosperous Farm in the Center of the Mendota Plains. Alfalfa Hay in Stack and Land Stripped for Irrigation

Kern County Rancher Realizes $300 an Acre Experimenting With Rice Growing

Among the novel agricultural experiments recently come to light is rice growing in Kern county. Jesse Peter, whose ranch is in section 6, 21-24, has met with excellent results and he has placed some fine specimens of rice in the sheaf and the grain after it was threshed in the Board of Trade rooms in Bakersfield. Peter tried rice growing rather idly on a bit of waste lowland, planting an acre to the grain and gave it little or no attention. From the acre he realized of $300 and he says he will put in a crop the coming season, making it a demonstratable proposition that rice can be grown with profit in Kern county.

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Dispatching Electricity — System Served by Department Similar to Railroading

By E. J. CRAWFORD, Assistant General Superintendent

SERVICE! In the present day and age this is the slogan of all light and power companies. The consumer demands it and the producer bends all his energies toward maintaining it. It is the aim of every public service corporation to give as nearly twenty-four hour uninterrupted service as the battle with the elements will permit.

While in a certain sense service may appear to be the particular province of the operating department, each and every department in a large corporation is a factor in its maintenance, and no one can work independently without sacrificing the success of the final result.

Constant, diligent, harmonious work in and between all departments is the only means of giving the consumer his demands. Each one of the entire family of employees, from the new business solicitor to the collector, must work with a constant remembrance than he is only a link in the long chain of complete service, and use every effort to give satisfaction. Even the trouble shooter can furnish his share in carefully following up a complaint.

Although this is all true, the maintenance of service as it is generally understood, is primarily the duty of the operating department. Here again, as in the general scheme of the corporation, results are obtained not by the efforts of the superintendent of operation or the chief dispatcher, but by the concerted effort of the entire department, from the superintendent through all the line of operators to the man who keeps his lonely vigil along the mountain ditches. Each has his particular duties, the faithful performance of which is essential to the successful operation of the entire plant.

There is a certain similarity between the operation of a large electric system and a railroad, although the parallel cannot be carried out entirely. One of the essential fixtures on a railway system is the dispatcher's department, with the chief dispatcher and his corps of assistants. This department knows at all times the location of each and every train; its times of arrival and departure from various points; the necessity for rights-of-way for certain trains and for holding others; and in fact, everything concerning the movement of the entire system.

So it is in the operation of our system. We have a chief dispatcher who is at all times in touch with the load carried by the various plants; their remaining capacity; the probable load they will be required to supply; and the general condition and connection of all the transmission lines.

In order to keep in touch with the plant capacities, it is essential for him to be somewhat familiar with the water conditions and conduit ways supplying the hydraulic plants, and the condition of the apparatus in the steam plants. He has in front of his operating desk an outline diagram of the transmission system, showing all the main thirty and sixty thousand volt switches. The devices used for indicating the switches are buggy curtain fasteners, which can be turned in a position with the direction of the line or across it, showing the switch open or closed, respectively. By means of this board, the dispatcher has before him with just a glance the line connections on the entire system.

While everything is running very smoothly, the advantages in having a dispatcher are not so apparent, but when a "bunch of trouble" strikes the system, the necessity for his work is

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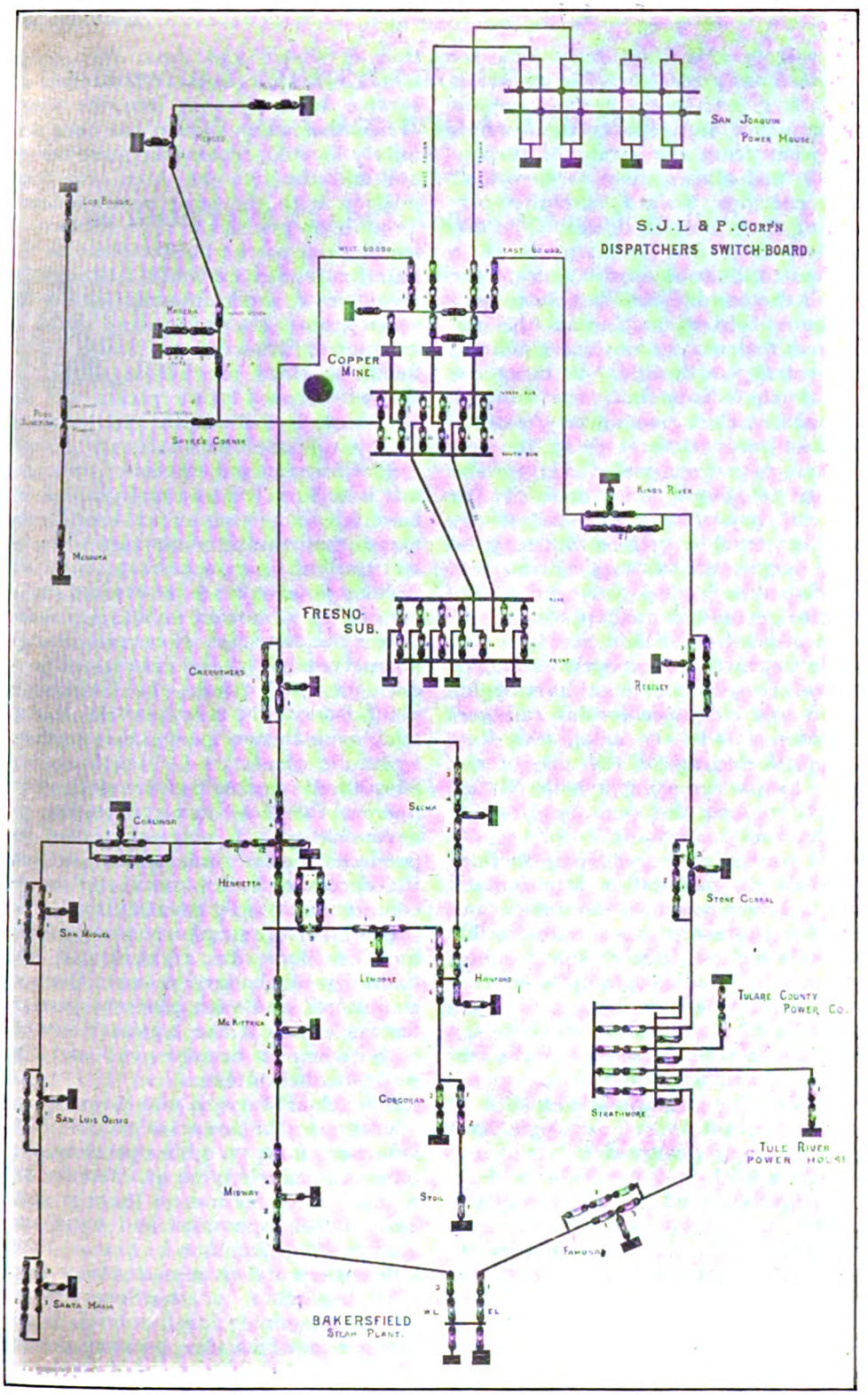

Dispatcher's Board Showing Transmission Lines

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emphasized. Men naturally look for a leader, and prefer to work under orders. It gives them a certain amount of confidence and relieves their minds somewhat from the strain of responsibility, and allows them to devote all their energies toward carefully performing their allotted duties. The dispatcher, from his location, is in a position to determine most quickly the seat of the trouble, and is able to give intelligent orders to restore the unaffected districts to normal condition and isolate the trouble. Without the aid of the dispatcher, the various divisions would be very likely to work at cross purposes, and delay the restoration of service indefinitely. The private telephone lines are of the greatest importance in successfully handling trouble. These lines, from every part of the system, centralize at the dispatcher's desk, and he is enabled to get into immediate touch with any section desired, and give the necessary instructions for operation. For obvious reasons, he must have right-of-way and clearance for his calls, regardless of who is using the line. Prompt forfeiting of the use of the phone by parties using it helps materially to reduce the time required to handle trouble.

The transmission system is sectionalized by the installation of automatic switches, which relieve the main trunk lines from interruptions due to trouble on the branches. Branch line troubles are usually handled promptly by the local agent in whose district they occur. The 60 K. V. trunk line, between the hydraulic plants on the north and the steam and hydraulic plants on the south, is protected on each end by an automatic switch set so high that nothing but a heavy short circuit or line down will open it.

In the event of a short occurring on this trunk line, the operators at McKittrick and Midway immediately open up the line and take power from either north or south, whichever source can furnish the supply first. This, of course, depends on which side of these stations the trouble occurs. After service is resumed, the defective section is tested out from the source which will not cause interruption to service when closing into the short. When the faulty section has been definitely located, repair gangs are rushed out and the line put back into commission with the least possible delay. Trouble on one of the main trunk lines leading out of the master plant on the San Joaquin river would undoubtedly result in a short interruption to the service until the faulty line could be cut out. Either of the lines is sufficient to carry the full capacity from the northern hydraulic plants, and the only time lost should be that required to separate the lines.

The foregoing methods of operation are based on the assumption that we have telephone communication. In the event that this communication is interrupted, it is necessary that the various power plants be given a right-of-way up to certain dividing lines between the districts. For example, supposing trouble on the desert section of our West 60 trunk, the Bakersfield plants have right-of-way to the McKittrick sub-station and the northern hydraulic plants as far south as it is possible to operate the line, each division for the time being operating independently. If necessary, the dispatcher uses the Sunset phone to pass the necessary orders until our private communication is re-established. As the number of our plants increases, the limiting lines for right-of-way will naturally be changed to meet the new conditions, and each plant be given a district which it can handle independently when it becomes necessary to separate the system.

The chief duty of the power plant operator in the event of trouble is to get everything possible operating, and try out the faulty line at intervals, until he receives orders to leave it dead. The station operators and patrolmen always consider that a line is "hot" unless they are given a clearance from the dispatcher or headquarters of either division. This, in brief, is the manner in which the operating department lends its help toward rendering "Perfect Service."

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Alfalfa—Its Requirements and the Best Methods for Its Care and Cultivation

By WARREN T. CLARKE, College of Agriculture, U. C.

ALFALFA, the wonderful forage plant, was introduced to this state some time between the years 1851 and 1854, and has not only become, in the time that has elapsed since its introduction, the standard forage plant of California, but it has also become known and appreciated far beyond the boundaries of the state. The annual value of the crop in California approximates some thirty-five millions of dollars now and the acreage devoted to its culture is constantly being increased. In view of these facts and recognizing the fact that concise information in the matter is demanded by both old and new planters the following summary of practice is presented.

Alfalfa is a deep feeding plant, sending its long tap root far down into the soil for nutriment. This deep feeding character of the plant should be noted and so far as possible the fact should be taken into consideration by the intending planter. A deep, well-drained, moderately heavy loam with no hardpan strata between the surface soil and the water bearing strata is to be preferred. Our best alfalfa fields are on such soils as these where surface water is to be found at from twelve to twenty feet down. This optimum of soil conditions should be sought by the intending planter; yet because of the adaptability of the plant, he may allow himself considerable latitude in the choice. Satisfactory alfalfa plantations are to be found on our very light sandy loams and on our very heavy adobe lands.

Noting the deep rooting habit of this plant, those soils where free water is found close to the surface should be avoided. Under these conditions the tap root is likely to decay and the plant will suffer if it does not succumb. Good drainage of the soil is an essential for success with this crop.

Most of our California soils are well supplied with the mineral plant food necessary for success with alfalfa, but, in many of these soils, there is a deficiency of decomposing organic matter, of humus. In this latter case it may be necessary to supply the lack by growing a winter green manure crop on the land and plowing it in, in the spring, before seeding to alfalfa. The character of the green manure crop will vary with the local climatic conditions though "the most favorable immediate results can probably be secured by the use of rye. This should be seeded at the rate of 80 pounds per acre." (U. of C. Exp. Sta. Bull. 211, p. 271.)

The first recorded seed of alfalfa brought into California came no doubt from Chili. Planted, as it was, in the great inland valleys of the state, its production here was begun under climatic conditions very similar to those from whence came these first seed importations. Soon, however, its adaptability to conditions very different to those found in the great valleys was proved and it is now a staple crop from the most northern counties of the state to the most southern. Alfalfa, however, seems to do best away from the immediate influence of the croast climatic conditions. For its best growth and production a long, hot growing season is desirable and the longer this growing season is, if other conditions are favorable, the greater will be the number of crops cut each year and the greater will be the yield. This optimum of climatic conditions then should be sought by the intending planter. However, wonderfully satis-

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factory plantations of alfalfa are to be found in regions of this state where the growing season is short. So we are justified in saying that the adaptability of the plant allows of its use under a great variety of climatic conditions.

Under our California conditions of climate and soil the intending planter of alfalfa should be able to command irrigation water for his fields, either by gravity ditch or through wells and pumping systems. In general, this command of water may be considered as an essential for success. It is true that many alfalfa fields are to be found in this state where no facilities for irrigation exist and yet good crops are harvested for terms of years; still the success of these occasional fields is not so great as it would be were water available when needed. Both pocket gophers and squirrels are a pest in alfalfa fields and the only fully effective way to destroy them is by drowning. If the general soil conditions do not seem to demand the use of irrigation water for the success of the crop yet the possibility of drowning out these pests must be considered.

As to the amount of water, the intending planter should be prepared to use for irrigation purposes, the figures will vary with the character of the soil and with the depth of soil to the water table. In the Sacramento valley with a rainfall of from 18 to 20 inches a year, from 3 to 18-acre inches of irrigation water are used. This great variation at least emphasizes the fact that the amount of irrigation water will depend on the individual need of different fields at different times and no set rule as to amount to be used can be enunciated. The needs of the field must be determined by the irrigator.

Must of the land that is being put into alfalfa in this state has been used previously either for pasture purposes or for grain growing. In either case, but more especially in the latter, the physical condition of the soil is bad. Almost invariably we find in these lands at a depth of a few inches what is commonly known as a "plow sole" or "cultivation hard pan." This is in no wise to be considered as a true hardpan, but is, more correctly speaking, a concentration at the ordinary cultivation depth of the finer particles from the upper strata of the soil. This "plow sole" must be broken up to obtain satisfactory results from the land in growing alfalfa. The first move then, in the proper preparation of land for alfalfa, is to plow it deeply so as to fully break up the "plow sole." This deep plowing should be done before any leveling is done. In many cases that we have studied the plowing has been done after leveling, and, as a consequence, in the low places, filled in with moved earth, the plow sole has not been broken up. The result has been that in a short time—a year or two—the field presented a spotted appearance and the alfalfa failed to produce as it should in the places where breaking had not been done.

The land should be well leveled so that it can be irrigated in the most economical way. To do this the services of a surveyor should be called in and levels determined. If the square check system of irrigation is to be used, the checks should be of such a size as will permit of the high point being covered with water to a depth of three inches at least with a levee system of not more than twelve inches in height at its highest point. The levees should be made both broad and low, not more than twelve inches high at the most, as before stated, so that when the field is producing, the various implements, mowing machines, rakes, wagons, and so on may be used over the field as a whole without reference to the levees. The slope of the land may be such that contour line levees may have to be used. If this is the case, the same general principle of low levees holds. In certain cases it may be desirable to use the strip system of levee placing. This system can be used to advantage where the soil is moderately heavy and where the land slope is not too abrupt.

While deep plowing is essential in the proper preparation of land for alfalfa planting, it should be remembered that the alfalfa seed demands a

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firm, compact seed bed for its best success. Therefore, after the land has been deeply plowed, leveled and scraped and then replowed, it should be gone over carefully with some sort of compacter. An ordinary roller followed by a light harrow may be used. The disk cultivator with the bar set straight has been successfully used for compacting. Indeed, any implement that will compact the soil somewhat and still leave the surface fairly loose may be used.

The first question that will arise in the mind of the intending planter, when it comes to a choice of seed, probably will be as to the variety of alfalfa to plant. Studies of this question indicate that for the general conditions found in California, the Chilian alfalfa, the first to be introduced to the state, is the most satisfactory. For the ordinary plantings then, in our great valleys, either north or south, good, clean, vigorous seed of this variety, should be used. The source of this seed, that is, the locality where grown, should be known by the planter so that its desirability may be in part at least predicated. Four ounce samples of the seed may be sent to the Experiment Station, Berkeley, California, for purity and germination test. This service is performed gratis and the intending planter should certainly take advantage of it so that he may be sure he is using strong seed free from dodder and other noxious weed seeds.

If the conditions of moisture, climate and soil are not wholly satisfactory, the intending planter should use the Turkestan variety of alfalfa. This variety will crop on less water than will the Chilian and will make a better growth in cold weather than will this last. The Turkestan alfalfa does not, here in California, make as fine and clean feeding a hay as does the Chilian. A third variety of alfalfa, known as Arabian, is desirable for certain special purposes. It is known as a five year perennial, while those previously here mentioned are known as twenty-five year perennials. The Arabian alfalfa is especially good for heavy soils, makes a good winter growth, and the product is fine in character. It is especially to be recommended for orchard interplanting, as it begins to fail in the fifth or sixth year of its growth and can be easily plowed out of the orchard when the trees are making strong demands on the soil. Many other varieties of alfalfa have been tested in California, but so far the choice seems to lie between the three varieties named.

The amount of seed used per acre varies very materially with different planters, but careful studies of the question indicate that if a clean, vigorous seed is used, from twelve and a half (12½) to fifteen (15) pounds per acre is ample. Using more of such seed would mean waste. This seed should, for best results, be drilled into the well prepared land and no nurse crop used. Some planters use a nurse crop of some cereal, but the practice does more harm to the young alfalfa plants in robbing them of moisture than it does good in a fancied protection.

The time of planting will depend altogether upon the frost conditions in the locality where the planting is to be made. The fact should be noted that the alfalfa plant, when in the seed leaf stage, is easily killed by frost. If, then, frosts are likely to occur in the region where the plantings are being made in the fall, seeding should be postponed until all danger of cold is over in the spring. After the plant has passed the seed leaf stage it is much more resistant to frost.

It is a well recognized fact that for full success in growing alfalfa the plants must be supplied with nitrogen gathering bacteria. These minute organisms, so essential to the proper growth of this plant, are usually present in our California soils, but as a general thing artificial inoculation should be practiced. Where new plantings are to be made, especially if at a distance from other plantings, it is the part of wisdom to insure the presence of bacteria by some inoculating process. There are to be obtained on the market pure cultures of bacteria for the purpose in question, and under

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some conditions it may be desirable to use these cultures. Generally, however, a perfect inoculation can be obtained by broadcasting one or two hundred pounds of soil from some well growing alfalfa field over each acre of the new field. This inoculating soil should be well harrowed into the land before seeding is done. The process is not difficult and requires no technical skill.

Inoculation can also be most satisfactorily accomplished by what is known as the "soil suspension" method. A quantity of soil is taken from some alfalfa field that is growing well and upon the roots of the plants of which the nodules, indicating the presence of the desired bacteria, can be found. To the volume of soil used two or three times its volume of water is added. This is stirred vigorously several times a day for two days, and then the earth ii allowed to settle. The alfalfa seed is then dipped in the water which now carries the bacteria. The seed then is dried in the shade enough so that it separates readily. Planting should then follow immediately. The method has the advantage of being cheap, easy and effective. The planter of alfalfa should certainly insure the presence of these necessary bacteria.

It has been previously pointed out that no definite rule as to the amount of water to be used in growing alfalfa can be laid down. In general, however, experience indicates that frequent shallow irrigations are to be preferred to occasional floodings. In the writer's experience and observation an irrigation of about three acre inches ten days before cutting the alfalfa brings the best result on most soils.

Irrigating at this time before cutting has a tendency to overcome leaf shedding, and it should be remembered that the best part of the food value of alfalfa is in the leafage. Alfalfa should not be allowed to become too mature before cutting as when this occurs there is sure to be considerable leaf dropping and food loss. There are two good rules to follow in determining time to cut. The first of these rules is to cut when an occasional blossom is to be seen in the field. This is a fairly good rule, but the second, to cut when new growth appears at the crown of the plant, is perhaps more reliable.

Finally, the alfalfa planter should remember that he is dealing with a growth of high food value, capable of being used as a ration for all farm animals, and a plant that will continue to produce well through a generation, and perhaps longer, and he should, therefore, spare no pains in getting the best results from his plantings. Proper care at all points with accomplish this.

Experts After Rodents With Renewed Vigor

The squirrel campaign is to again be prosecuted and with increased vigor. California farmers who do not resort to heroic measures to kill every ground squirrel or pocket gopher they see are taking the eggs out of their own basket, according to a bulletin issued by the agricultural experiment station of the University of California at Berkeley. "Kill the Pests" is the slogan of the latest pamphlet issued by the department. The pocket gopher is especially fond of the roots of garden truck and orchard trees, and the ground squirrel attacks grain and nuts and fruit. Furthermore, both are proved carriers of the bubonic plague and should be exterminated on this account, if none other, the scientists assert. Poisoned grain is the means of extermination favored by the college experts, their observations being that this is the most effective during the dry season, but carbon bisulfide, liberated in the burrows, may also be employed with good result.

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Winding Course of Road on Way to Summit

Valley and Coast Connected by Scenic Route Second to None in the State

WITH the early completion of about thirty miles of new highway between Coalinga and Parkfield, one of the most beautiful of scenic mountain roads will be thrown open to the use of the traveling public. It will connect the coast counties with the valley counties and will provide a means of rapid and easy travel from one section to the other. It will make the pleasures of a dip in the surf only the question of a few short hours travel for the residents of the interior, while tourists will be enabled to enter the great San Joaquin Valley through its most picturesque gateway. But a few miles of the highway remain to be built and the dedication of the road in May will be an event which several counties will celebrate.

The Coalinga-Parkfield highway has been built jointly by the counties of Fresno and Monterey. The nineteen miles of road from Coalinga to the Summit was built by Fresno county at a cost of about $11,000. The expense to Monterey county will not be as great because the portion in that county is little more than half as long as in Fresno.

The road is a most difficult piece of work in every respect but the labor has been well performed. It winds its way around the sides of the hills and across gulleys in a serpentine course which in only one or two instances permit a straight away of 200 feet. The curves are easy and free of danger, with careful driving, but if one ventures too near the edge he might be surprised with a fall of several hundred feet over a sheer precipice.

Traveling the road from the Coalinga end the stiffest grade begins a little more than six miles from the summit. It is quite a pull for an auto-

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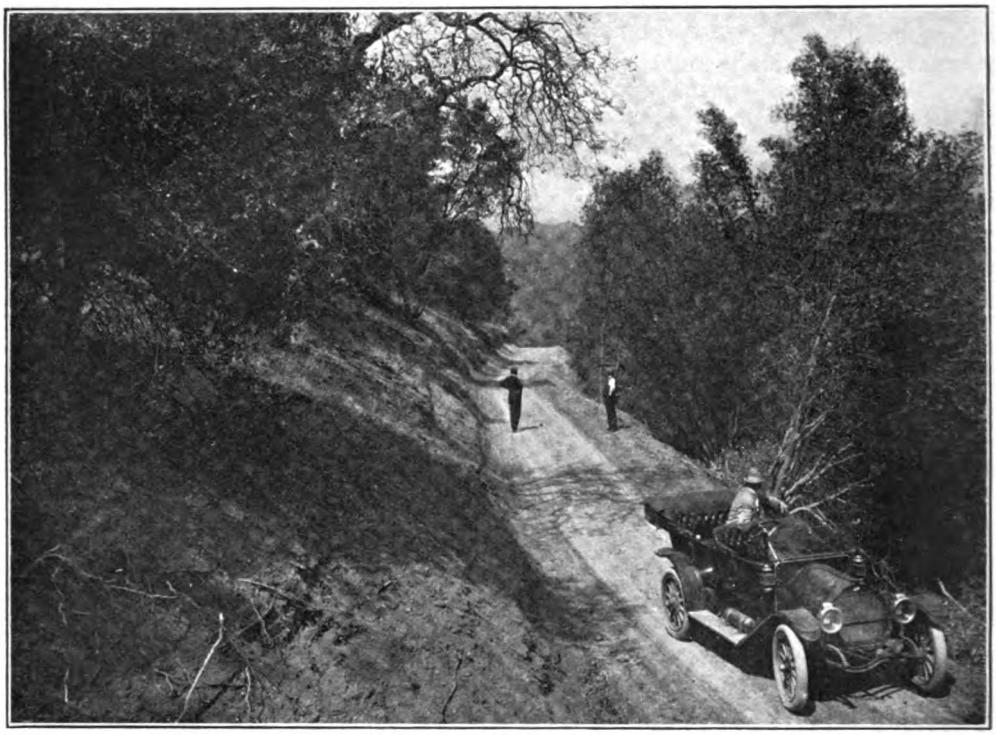

One of the Beauty Spots

mobile but the perfect condition of the surface of the road, which is kept clear of rocks and bowlders, makes it a pleasure to climb. However, the mettle of many a machine will be tested before the highest point on the new route is gained. The summit has an elevation of almost 3500 feet and commands a magnificent view in all directions.

Ascending from the Coalinga side the scenic beauties of the ride are wonderful, particularly during the spring season. High above Jacalitos creek, after leaving the Warthan canyon road, scenes of comfortable farm homes sheltered in green valleys and clearings with stock grazing in the fields, pass by with kionetiscope like rapidity while a hundred feet below is the old Parkfield wagon road, which has been in use for more than a half century, winding its way around the base of the steep hillsides.

A sharp turn suddenly brings into view Colwell Butte, which towers a hundred feet above the road. It is a perpendicular mass of ragged rock jutting out in all directions, and is so variously colored as to give it the most peculiar changeable effects under the sun's rays. Farther on is Roberts Rock, another scenic beauty, and at the base of it is Lurette Lake, a small body of water clear and beautiful. Onward and upward Inspiration Point is reached from which is beheld the most beautiful of scenes. Through a saddle in the foothills Coalinga can be seen silhouetted against the gray foothills, the derricks of the West Side oil field standing out in bold relief like so many desert sentinels. Tall pines and gnarled scrubby oaks line the side of the roadway in pleasing contrast with the barrenness of the distant foothills.

The ride is indeed a scenic spectacle and will undoubtedly be immensely popular with the automobile tourists.

A movement is now under way to build a permanent highway between the San Joaquin Valley and the coast

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by way of Coalinga so as to include the new Parkfield road. It is proposed to make it a connecting link with the system of state and county highways now being built, in which event it will be a co-operative enterprise fostered by the San Joaquin Valley counties. The realization of this project will provide a route of travel which in time will, without a doubt, become one of the most popular in the west.

Alpaugh Colony Fast Developing as An Alfalfa and Dairying District

Home and independence is the life dream of the average man and there is no locality in this great state where this dream can be realized more fully than at Alpaugh. The soil seems especially adapted to alfalfa and the vast amount of acreage seeded and the amount of acreage being prepared for seeding to alfalfa is making this section one of the great dairy centers of the state. There are several 10 acre dairy ranches that are bringing their owners large returns and the up-to-date dwellings and modern improvements on these small holdings are the surest signs of prosperity and contentment. There are at present about 1000 acres in alfalfa on the colony and about 300 acres are being prepared for seeding this spring.

That it pays to keep good cows has been demonstrated by John Foss. Mr. Foss has three fine Jersey cows from the D. H. Lemey herd of Jefferson, Oregon. During the month of January Mr. Foss received a check from the Dairymen's Co-Operative Creamery Association of Tulare for $78.15, making $26.05 per cow. Taking into consideration the fact that it takes just as much feed to keep a cow paying $6.00 or $8.00 per month as it does to keep a cow like those quoted above, it pays to get the best.

J. Gillean has purchased the 5 acres adjoining him on the north formerly owned by A. B. Ward. It is seeded to alfalfa and has a small dwelling on the property. The consideration was $1050.

The Second Extension Water Co. brought in a good well at Smyrna at a depth of 167 feet. There is a flow of 10 inches and the company feels confident of a good pumping well.

Perry Neeley has sold his ranch consisting of 238 acres and located north of the colony to J. M. Davis of Santa Ana.

Poles are in place to run the power lines to the Golden State property and the W. I. Keese ranch.

E. P. Meagher has 60 acres ready for alfalfa and intends seeding 200 acres more to alfalfa.

Work is progressing very rapidly on the new library building at the corner of Broadway and Center streets.

W. B. Palmer of Pasadena, who recently purchased the Butcher tract of 80 acres, south of the colony, is arranging to build a modern bungalow on the property. Mr. Palmer will seed the entire tract to alfalfa as soon as there is ample water developed.

Niss Hansen has just added 90 fine milk cows to his dairy, making a total of 315 cows on the big ranch.

E. N. Johnson is building a new dairy barn 18x120 feet in size on his ranch south of town.

Geo. A. Smith is installing four 6-inch pumps, each of which will be connected with three wells. Electricity will be the motive power.

O. W. Odell has bought a lot on Jepson avenue near the Methodist church and plans to soon begin the erection of a modern 5 room bungalow.

Jack Hanley is building a barn in the rear of his Whitley avenue residence. A. B. Frazer, who recently bought a ranch west of town.

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Work on the New No. 2 Power Plant on the North Fork is Well Under Way

THE No. 2 plant of the San Joaquin Light and Power Corporation is located on the North Fork between Power Houses No. 1 and No. 3 and the No. 2 Power House will be erected about one mile south of the North Fork post office. Under the present operation of the two plants the water, after passing through the No. 3 Power House, runs into the natural channel of the North Fork creek to the intake of the No. 1 plant. The purpose of the No. 2 plant is to utilize this water.

View of the No. 1 Reservoir Site at Plant No. 2

Thirty-six hundred feet below Power House No. 3 a dam will be constructed in the channel of North Fork which will back the water to the tail race at Plant No. 3 and form a lake of about 25 acres surface area. This lake will furnish a storage of about 123 acre feet and will assist in carrying the peak load of Plant No. 1. At the dam will be located the intake gates to the No. 2 conduit. These gates will be operated by means of compressed air or electricity from Power House No. 3. The conduits and tunnels will be cement lined, six feet wide and four feet deep, with a uniform grade of two feet in 1000 feet. There will be 6381 lineal feet of tunnels including approaches, 8553 lineal feet of open conduit and 575 lineal feet of flumes.

Below the lower end of the conduit another dam will be built which will back the water to the end of the conduit, forming a forebay ten acres in area. The pressure pipe will be about five feet in diameter and 3400 feet long. The intake gates to the pressure pipe will be at the dam and 15 feet below the surface of the water in the forebay. The plant will be operated with 120 second-feet of water under 309 foot

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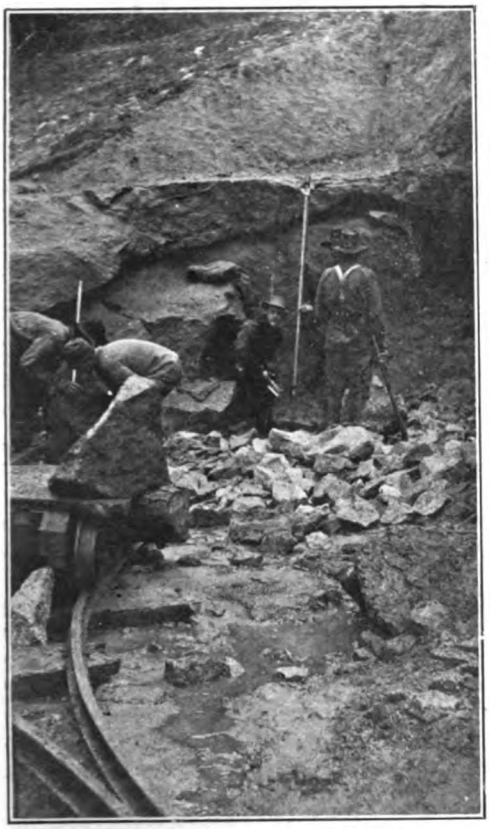

Surveyors and Miners at Work in the Granite

head, and will develop about 2700 k. w. on the switchboard.

Construction work was commenced in January of this year. Less than one-half mile north of North Fork post office is Headquarters Camp, accommodating at present seventy men, and material for two additional camps to accommodate sixty men each has been ordered. The right-of-way has been cleared, and brush and trees removed from the proposed reservoirs. Seven tunnels are opened at both ends, and 800 lineal feet of tunnel had been excavated the first of April. In most of the tunnels the material has been soft enough so that the rock could be bored with "Hardcosh Rock Augers," but hard granite is also encountered, and two Fort Wayne electric drills have been ordered. A compressor and air drills will also be installed. A transmission line from Power House No. 3 is built alongside the conduit, furnishing light and power to the tunnels as well as to camps.

E. Newman is the engineer in charge of the work; D. D. Stilts, the assistant engineer; A. Avery, tunnel foreman, and G. F. Leslie, timekeeper-accountant. When the new camps are started additional foremen will be engaged. Fred G. Webber will be general foreman on the work.

South End of No. 3 Tunnel

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State University Sends Dairy Special to Instruct the Valley Farmers

The annual trip of the University of California Dairy Special was made through the San Joaquin Valley earlier in the month. A large crowd of interested persons attended the lectures and viewed the demonstrations at every stop. The officials in charge of the train expressed themselves as much pleased with the results of the tour.

The State University sent out the Dairy Special in the belief that face to face talks and demonstrations will accomplish more in educating the dairymen in the latest cures and preventions of cattle disease than all the literature and photographs that can be sent out. Four cars of the special were taken up with lecture quarters and demonstrating booths.

In one department were recited the proper methods of feeding stock and the example, a splendid animal, was shown. Then the reverse, showing the result of improper feeding, was exhibited. In this same department bovine diseases and their cures were explained with a practical demonstration of the application of the remedies.

The lecturers occupied one entire car and their equipment consisted of diseased members of cattle and hogs, photographs showing the application of remedies and the cost of the cures. Hog cholera received a great amount of attention in these lectures and the experimental farm at Davis is sending out the new serum treatment in small quantities. Its use to obtain the best results was explained by the lecturers.

Dehorning of dairy cattle is considered a very important feature of the care of dairy cattle and the proper manner of doing this was explained and illustrated. The proper instruments to use and the method of treating the wound were made clear. The care of young calves, the time, amount and kind of feeding and the selection of stock for various purposes, were a topic for another lectures.

Scientific dairying was thoroughly illustrated in one car. The care of milk from the time it comes from the cow until it goes to creamery or consumer was shown. Milk and cream tests, sanitation, sterilization of utensils and receptacles and other details were carefully explained. The importance of herd tests for the purpose of eliminating the poor cattle was urged.

Alfalfa production was shown in another car. Four kinds of alfalfa were exhibited and the best methods of raising it were lectured upon. What seed to plant and the time of planting best for wet and dry grounds and different soils were told. The dairymen were also warned against weeds most commonly found in alfalfa.

Following the alfalfa car was the stock car where four head of stock, two cows and two hogs, were kept. For demonstration they were taken on a flat car behind their barn car. A railing had been built around the flat car and it was used as a demonstration corral. The live stock was displayed to show the contrast between animals properly and improperly reared. One cow was a splendid specimen while the other was just the opposite as a dairy cow but good for beef. The hogs showed the same contrast. The manner of their raising was gone into at length.

The following university representatives accompanied the special: Prof. N. E. Van Norman, dean of the university farm and vice director of the College of Agriculture experiment station; Prof. N. T. Clark, professor of horticulture and superintendent of extension in agriculture; Prof. J. I. Thompson, animal industries; Dr. C. M. Haring, veterinary; Dr. C. L. Roadhouse, veterinary; Prof. L. M. Oavis, dairy industry; D. N. Morgan, college activities.

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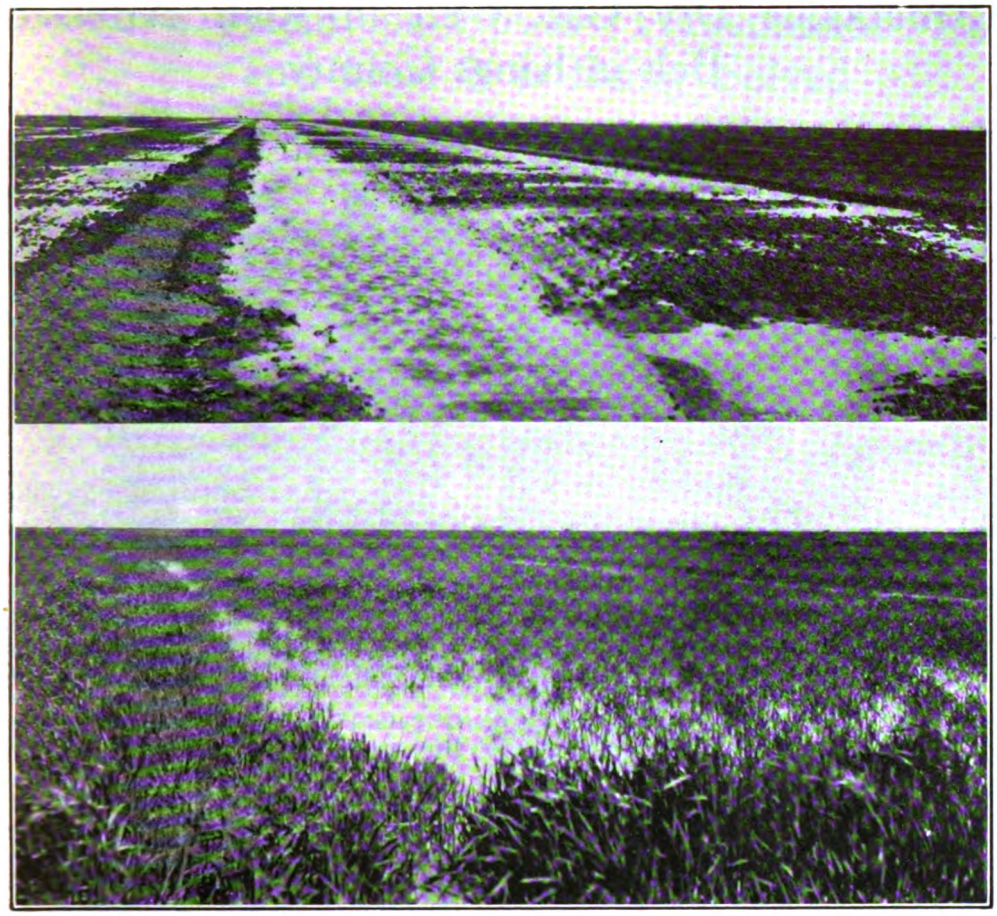

Two Demonstrations of Strip Irrigation. Above, Virgin Soil being Irrigated Before Planted to Corn. Below, Grain Field Irrigated Because of Lack of Rain

Strip Irrigation Spreading From One End of the Valley to the Other

The practice of strip irrigation is spreading from one end of the valley to the other. Travelers, whether in automobile or train, remark that the greater part of raw land being broken is prepared for irrigation by the stripping method. The claims of the advocates of this method, that irrigation can be more effectively and less expensively done by stripping, are being substantiated in every locality and together with the use of the reservoir and continuous pumping better results are being obtained than at any previous time.

The picture on this page shows the stripping method in two of its stages; the raw land undergoing first irrigation before the planing of corn, and a young crop of grain being irrigated to save it from failure threatened by the lack of rain.

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Remarkable Dry Gas Well in Rich Artesian Belt in Kings County

One-inch Gas Well 185 Feet Deep on the Left. Crosses Show Gas Flow. Two-inch Artesian Well 427 Feet Deep on the Right

Kings county, rich in natural resources, has long been developing natural gas but recently a well was drilled on the Santa Paula Ranch Tract which is different than any previously brought in. It is a dry well and is emitting a tremendous amount of gas.

It is no uncommon thing in the southern part of the county to encounter gas in artesian wells. In fact, many ranchers obtain their water, light and heat out of the same hole in the ground, but in the case of the well shown in the picture there is no water. It is a two-inch well put down to a strata of pure gas and with a reduction of one inch has a pressure sufficient to convey gas to the ranch house when the valve is nearly closed down. If opened wide many thousand cubic feet of gas would flow in a day.

The gas flow can be plainly seen in the photograph, though no water comes up with it as in many other wells.

The other photograph shows the flow from a two-inch water well drilled adjoining the gas well. The artesian belt in Kings county is one of the few places in the country where the rancher is doubly blessed, he obtaining his fuel and light from the same well as he does a water supply for irrigation, stock and domestic purposes.

Big Land Sale

The Bert Hannaford Ranch of 160 acres near Woodville, Tulare county, has been sold to Otto L. Quandt of Santa Ana for $20,000.

Dairy Brings $50,000

R. A. Van Loan has sold his 320 acre dairy ranch five miles southwest of Fresno to A. A. Barthoff of Pennsylvania for $50,000.

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The Problem of Power Transmission Poles and How it is Being Solved

By W. R. WHEATON

IN 1905 the San Joaquin Light and Power Corporation, through the efforts of Mr. A. G. Wishon, induced six of the public service corporations in Los Angeles to join the San Joaquin Light and Power Corporation as parties to a co-operative contract with the U. S. Forest Service, the object of which was to obtain some first hand information relative to the preservation of power transmission poles. I was sent to California as the representative of the Forest Service in charge of this co-operative work. The experiment was made on a comprehensive scale and a line of poles, treated by various preservatives in various ways, was set in the lines of each company which was a party to the contract. The poles treated and set for the Los Angeles companies were all of cedar. These poles have been in service for over five years and of those which were treated, only those impregnated with creosote oil have shown up well. Of these poles not a single failure has been reported.

The San Joaquin Light and Power Corporation had experienced considerable difficulty in obtaining cedar poles, and they had a possible source of supply nearer home—the western yellow pine of the Sierras—if this pole could be so treated as to increase its normal life of approximately one year. The work done by the San Joaquin Light and Power Corporation was confined entirely to this species. A line of poles was set from Dinuba to Red Banks. These poles were treated with the following preservatives:

Creosote and carbolineum applied with a brush; crude oil forced into the timber to a depth of 1½ inches; creosote forced into the timber; chloride of zinc forced into the timber and a combination treatment of creosote and chloride of zinc.

Stubs of untreated material set at various distances along the line decayed in a year's time. An inspection of this line two years after the line was set showed the failure of the poles treated with a brush application of creosote and carbolineum. An inspection three years after the line was set showed the failure of practically

Stand of Lodgepole Pine

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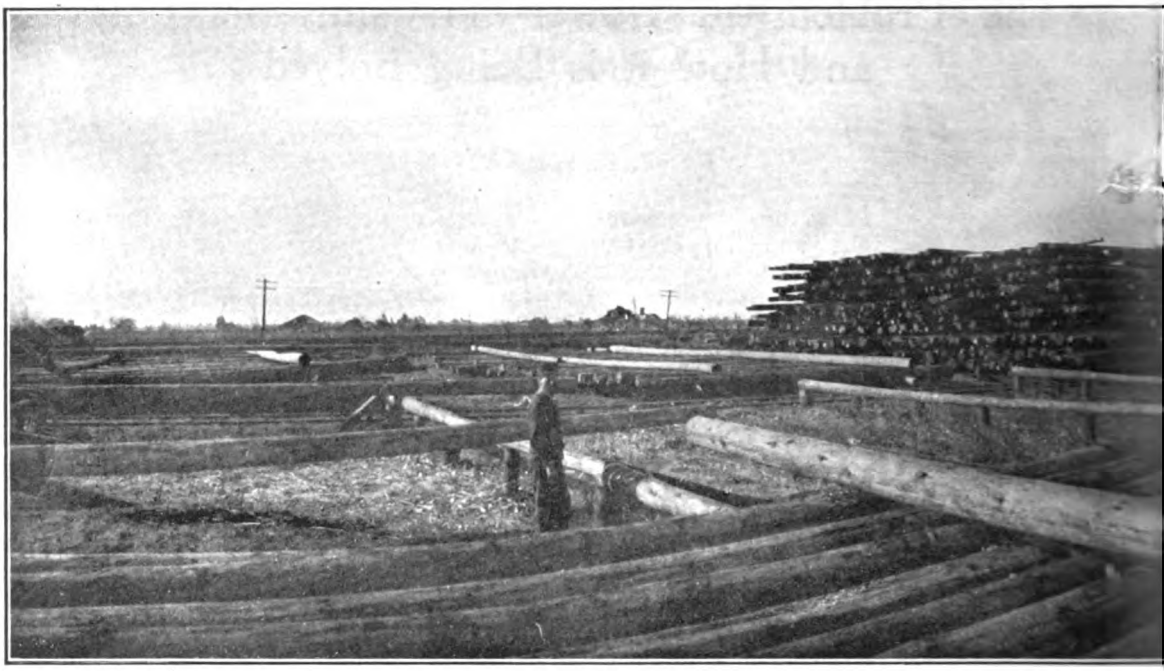

POLE TREATING PLANT OF SAN JOAQUIN LI

all of the poles treated with chloride of zinc and of those treated with crude oil, and a very large percentage of those treated with the combination of creosote and zinc chloride. This line has now been in service for five years and there has been no failure of the poles treated with creosote by the open tank method. By this treatment the poles absorbed about twelve pounds per cubic foot with a penetration of not less than one and one-half inches.

As a result of this work the San Joaquin Light and Power Corporation installed a timber department in 1910 and erected a creosoting plant in Fresno for the treatment of all timber used in the ground. This treating plant was the first of its kind to be built on the Pacific Coast. In 1912, when the new construction operations on the coast division of the company were started, a plant was built at San Miguel to handle the material for the Coast system. The San Joaquin Light and Power Corporation and the Coalinga Water and Electric Company are today the only concerns on the Pacific Coast who own and operate their own creosoting plants.

In 1910, the San Joaquin Light and Power Corporation entered into a contract with the Standard Lumber Company of Sonora to purchase 5000 poles of yellow pine. The stumpage was purchased from the Standard Lumber Company and the work of cutting the trees and manufacturing them into poles, the work of getting them out of the woods to the railroad and loaded and shipped to Fresno was all handled by the San Joaquin Light and Power Corporation.

When the Fresno plant first started operations the use of fire killed cedar was recommended for several reasons; (1) because the timber was dry and would be ready to treat as soon as delivered in Fresno and would eliminate the necessity of holding in the material yards for several months to season sufficiently to creosote; (2) because the saving in freight due to its dry condition would amount to from 40% to 50% over that paid on green poles; (3) because the fire killed timber was in no way injured and was a product equally as good if not better than the

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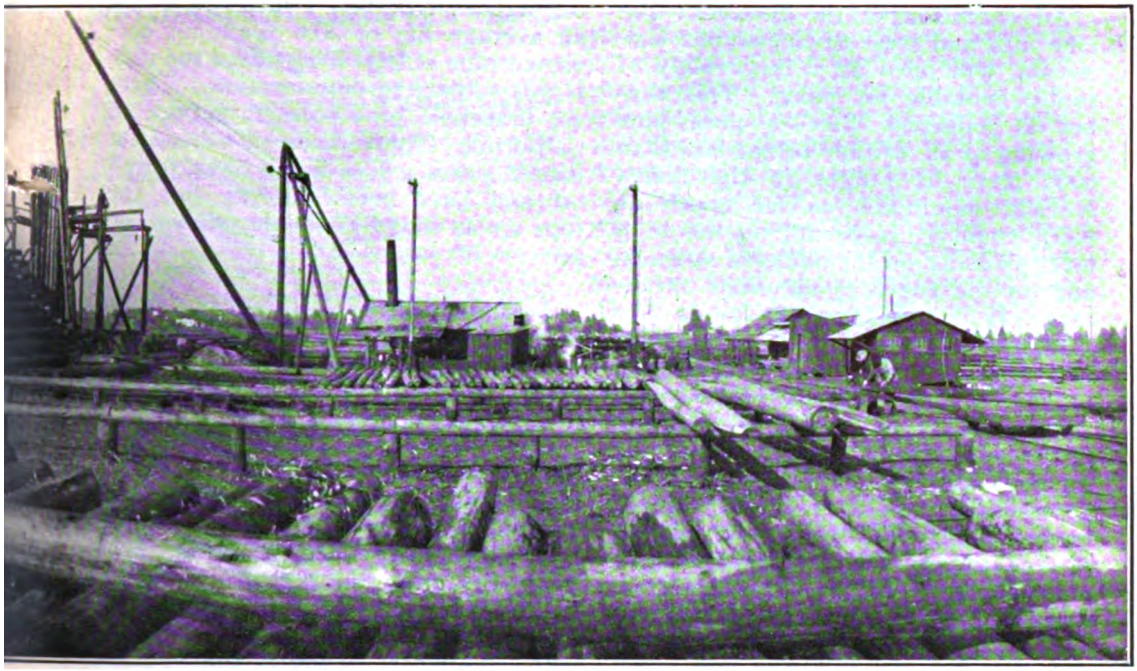

HT AND POWER CORPORATION AT FRESNO

green pole in general use. At that time there was not a concern operating on the Pacific Coast that would accept a pole known to be fire killed; their specifications did not allow of fire killed timber although fire killed timber was occasionally "slipped over" on them. The San Joaquin Light and Power Corporation has been specifying fire killed timber, only, for the past three years. In that length of time other concerns have fallen in line and are using fire killed timber and today the jobbers tell us they cannot supply us with fire killed timber as the available supply has been exhausted.

The pole situation at the present time is in a precarious condition. Cedar poles are very scarce and hard to get. Deliveries are very slow and uncertain. Present indications seem to point to a condition in which the demand exceeds the supply and the only remedy would seem to be in the use of a timber other than cedar, if a liberal supply of such timber can be obtained at a reasonable figure with good transportation facilities.

In the industrial development of the country the supply of the better timbers, the long lived timbers, has been largely depleted. The railroad systems, which formerly used such timbers as the white oak, chestnut, and similar woods, have been unable in recent years to get this material for their ties and they are today using timbers such as the loblolly pine, the gums, red oak, and other woods which a few years ago were considered useless. These timbers are given a preservative treatment and the railroad system gets a tie of a timber which was formerly considered useless, a tie which gives as good service as the long lived timbers formerly used and they get it for a price not in excess of that formerly paid for the higher grade material.

The pole consumers on the Pacific Coast are at present facing a period of transition from the standard cedar pole to a pole of another species. A situation similar to that faced by the railroads a decade or more ago. The supply of cedar is rapidly diminishing and the future will see a pole of some timber other than cedar in common use.

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An extension of the Southern Pacific into and west of Susanville, California, will open up a large body of timber suitable for poles. This timber is lodgepole pine—a pure pine growing at an altitude of not less than 6000 feet. It ranges in the Sierra Nevada mountains as far south as Kern county. It occurs on the high level plateaus, on the banks of streams, and on the edges of mountain meadows. It occurs in pure stands. It grows throughout the Rocky mountain regions where it has been used as saw timber (sold as white pine), running stulls, poles, ties, etc. It has not as yet had any general use on the Pacific Coast for poles, due to its inaccessibility. It is a hardy timber, having a material life in the ground of five to six years. Strength tests made by the U. S. Forest Service show that the lodgepole pine is 19% stronger and 25% stiffer than the western red cedar. It is susceptible to treatment, takes creosote readily and when so treated has an average life of twenty years. Records of the German Telegraph and Postal Department, covering a period of fifty-two years, show an average life of 20.6 years for creosoted pine poles. The top of the pole is not subject to deterioration. There are lodgepole pine poles in service in California. These poles have been set for 18 years. The butts have rotted off and have been stubbed, but the tops are as sound as the day they were set.

A timber such as this can be so treated that the life of the pole will be determined by the life of the top rather than the life of the butt, as in the case with timbers now in use.

This species of timber has come largely into use in the Rocky mountain country, particularly in Colorado, and shipments of creosoted lodgepole pine poles have been made to New York city from the western slope of the Rocky mountains. The construction of the railroad mentioned above will make a large body of this species accessible for use on the Pacific Coast and the future will undoubtedly see the lodgepole pine in general use on the Pacific Coast.

Alfalfa Takes the Place Formerly Given Eucalyptus

After having decided that the raising of eucalyptus timber for the market was not the most profitable use to which their land could be put, the California Eucalyptus Timber Company in Tulare county has seeded and has growing 115 acres of alfalfa. They have 400 acres of land in all and intend planting the rest of it to alfalfa during the coming winter. The start was so late this winter that only the 115 acres could be planted.

The company has placed in operation a new 10 horse power electric pumping plant on their ranch near Pixley. It is their intention to install another pumping plant on the property this fall.

Whether the alfalfa will be sold for hay or fed to stock will probably depend greatly upon the hay market.

Making Good Progress With State Highway

Work on the State Highway is progressing with great rapidity, the grading crew having finished on the south side of the San Joaquin River and crossed over the river, where they are now at work on the north bank toward Madera. The work being done insures a good and lasting road. The road from Herndon into Fresno is a perfect drive.

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San Joaquin Light & Power Magazine

Published in the Interest of the Consumers and Employees of the San Joaquin Light & Power Corporation

I. W. ALEXANDER, Editor and Manager

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VOL. I APRIL No. 4

Mazda—Perfection in Electric Lighting

Mazda is the nearest to perfection yet accomplished in the highly scientific art of lighting.

It is not the product of any particular factory nor can any particular company lay absolute claim to it. There is a secret process by which a fine wire is made from tungsten metal for use in incandescent lamps and every lamp that is made with a filament of this material is a Mazda lamp. Only the discoverers of the secret make the tungsten filament but a score of different manufacturers of lamps purchase the magic wire for their product. These manufacturers, whatever their names may be, are therefore turning out the highest type of incandescent lamp yet perfected, and a purchaser may rest secure that when he buys a lamp labeled Mazda he is getting the best that can be procured.

The meaning of Mazda is found in the superstitions of the ancient Persians.

"The Magi, or Magicians, fire worshipers, priests of the Persian god Mazda, in their ritual many thousand years ago, were wont to carry the sacred flames on a salver or tray. Their reputation for learning and wisdom has survived throughout the ages until today it appears in our language in the word 'Magic.' The winged circle, perhaps denoting the flight of the sun across the sky, was peculiarly the symbol of the god Mazda.

"The problem of artificial illumination has always occupied the attention of mankind. The earliest knowledge that we have of the human race centers about a religion in which the light and fire and the heavenly bodies were worshipped under the form of a god —Ahura Mazda (Divine Wisdom) whose cult under the Prophet Zoroaster and the Magicians became the guiding spirit of civilization for the whole of the then known world.

"Our knowledge of this primitive society is derived almost wholly from a few surviving hymns contained in the Zend Avesta:

> This I ask Thee, Tell me true,
> O Mazda!
> Who in the beginning was the
> father of Righteousness?
> Who established the path of
> the Sun and the Stars?
> Who is it through whom the
> Moon waxes and wanes?
> This, beside what Thou hast
> revealed to me, O Mazda,
> I desire to know.

"This dim voice of the remote past is the first known link in a chain of investigation, research and invention which has bound over sixty centuries of mankind, comprising within its folds the history of civilization and ending in the various achievements of modern science. The last link, following the revolutionary discovery of the incandescent light by Thomas A. Edison in 1879, has been the perfection of a system of artificial illumination employing the electric current and the Edison Mazda Lamp,—a system which for the first time in the history of the world offers a solution of the age-long problem of light for everybody.

"It is not unfitting that early historic aspiration and endeavor should be joined with present achievement; it is not unfitting that a name should be established in our language for the best light which scientists and manufacturers can produce—a name which shall always denote the most nearly perfect light that nature can offer and man can control—Mazda."

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Farmer is Adopting the Scientific Way

The increased interest taken this year in the tour of the State University Dairy Special through the San Joaquin Valley plainly shows the appreciation felt by the people of the efforts of the state officials to improve conditions throughout the agricultural and dairying sections of California.

The farmer nowadays who is unwilling to believe in scientific agriculture is out of date. Not long ago the business of farming consisted for the most part of plowing, seeding and then taking a rest until is came season to harvest and market the crop. Treatment of the soils, eradication of disease among animals, elimination of waste and dozens of other practices of scientific farming were totally unknown to the average tiller of the soil.

However, the remarkable development of the College of Agriculture of the State University and the work of its graduates throughout the state have brought about a new era. The way has been opened to more practical and more conservative farming, which means a greater amount of profit. The ridicule, which greeted the scientific farmer a few years ago, has been supplanted by profound respect and now the utterances and experiments of the students of agriculture are received with the greatest of attention.

The Farmers County Institutes are becoming more popular and incite greater interest every year, following up the work opened by the State University. These institutes are becoming one of the most important events in rural life. The practical results are being seen and general recognition is now given the worth of the scientific method of farming.

Power Company Doing a Great Work for Kern County

(From San Joaquin Valley Farmer, March 27, 1913)

During the past two years Bakersfield and Kern county have received great benefits from the extension of the San Joaquin Light and Power Company lines into this territory. The company took over the old street railroad in Bakersfield and modernized it, making the 11 miles of new track and equipment, equal to the best to be found in the larger cities. The power lines were extended into the oil fields, the colonies and throughout the country, wherever the call of the builders or the pioneers called for service.

Public Service Corporation

The company under the wise direction of General Manager A. G. Wishon has made service its aim. It has been the greatest single force in industrial development within the county and both in the city as well as in the colony districts the invasion of this company has been worth hundreds of thousands of dollars. It has not been a hold-back or a hold-up company and every whir of the juice coming in from the upper San Joaquin power houses has been a money-maker for the farmer, the laborer employed by the farmer, the railroad hauling the farmers' products, the merchants selling the farmers supplies, the clerks and laborers engaged in the industrial life of the city. Over 3000 horse power of electricity is furnished for Kern county wealth producers by the big power company and every dollar that is paid for power is a dollar that is doubling up for the consumer.

Farmers Making Money

The farmers in Kern county are making money with electric pumps, as one horse power of electricity costing $50 will irrigate a ten acre alfalfa

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patch. At Wasco, Rio Bravo and McFarland it is making thousands of acres of alfalfa grow where the desert held the settlers back only two years ago. It has made wide areas suitable for homes and profit-making. Conservatively speaking, one can well say without danger of refutation that fifty dollars spent for electric pumping will produce 25 tons of alfalfa hay worth $250 net on the ranch. When you figure that Wasco, McFarland and Rio Bravo are taking up about 1000 horse power of electricity for producing crops worth at least $250,000 some idea of the service may be gained.

The San Joaquin Light and Power Company is under the control of the public utilities commission so far as charges go, and this affords a safeguard against extortionate rates. If the charges are too high the remedy is always at hand and this to a large extent does away with agitation as to rates. There is a legal, orderly, business-like procedure to follow and neither the company nor the public is left without a chance for fair treatment.

Electric Power Supplants Steam for Pump on Best Well in San Joaquin Valley

Another step of progress in the development of the wonderful Tipton country was taken with the installation of motors to drive the big pump on the C. E. Taylor tract, better known as the old Browning ranch.

The work is being done in connection with other improvements which will allow of the water being pumped continuously instead of only in the day time. A big reservoir has been constructed to horde the outflow, that it may be used as needed. This reservoir contains an area of 60,000 square feet and is five feet deep.

Ever since it was put down the Browning well has been noted as the very best in the valley. Its output is 4000 gallons per minute and though the well is but 70 foot down the volume of water which it disgorges has never been at variance regardless of the season.

The steam plant has been in operation for the last 15 years but this is to give way for the more modern methods, which, while limiting the outflow to 3000 gallons, will allow the waters to collect and will be used in caring for a much larges acreage.

The Taylor ranch contains 1000 acres of land. Of this about 200 acres are in alfalfa and the balance of the land in grain.

Manager A. A. Young states that it is his intention to gradually increase the alfalfa acreage until the entire tract is grown to the king of forage plants, and believes that it is entirely possible to do this with the water now at his command.

The 200 acres now in alfalfa present an appearance as level as a floor, and so evenly has it been graded that a full flood of water turned into one of the 50x660 foot strips finds it way to the far end in a little over 20 minutes with the water on one side of the strip not four feet head of the other.

People said that this feat could not be accomplished but Young it the man who demonstrated that it could and this plan will be carried into effect in the sections which have been prepared and will be prepared for alfalfa in the near future.

What water has done for the Tipton country in the last decade is well illustrated by Young when he says that when he came here twelve years ago he could have purchased any of the adjoining land for $125 a section while now a single acre of it could not be purchased for the same money.—Tulare Register.

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Here's the Emblem of the San Joaquin Light and Power Corporation

For a long time past the San Joaquin Light and Power Company has been desirous of adopting an emblem. Designs were submitted from various sources, but the favored comes from within the ranks of the company itself. Mr. Herold Morton, of the draughting department, submitted the drawing which received the approval of the executives of the company. It contains the name of the corporation in full and an attractive monogram of the same in a design symbolic of Light and Power. The emblem will soon find its place on company vehicles and in company offices and will be conspicuous in all communities enjoying the service of our organization.

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The "Live Wire" Contribution Box the Morning After the Fatal Edict was Issued

Meteoric Career of the "Live Wire"—Official Ban on Aspiring Young Wits

Once upon a time, early in March, two ambitious members of the printing department thought it would be great fun to run a comic paper.

"You be the editor," said Eddie Hanson to Lew Marley, "and I will be the fellow to raise the coin."

In this manner the "Live Wire" came into existence.

The first issue appeared and it was a scream. Eddie had all he could do accepting the nickels and dimes for yearly subscriptions. The second issue was better than the first and the third was so "rich" that Assistant General Manager A. E. Wishon took particular recognition of it.

The following letter was addressed to, "Mr. Eddie Hanson, the Proprietor and Manager, 'Live Wire,' Office:

"Dear Sir:—I beg to advise you that the 'Live Wire' has gone insolvent and is a thing of the past. Very truly. A. E. W."

Following close on the heels of Mr. Wishon's announcement came the resignations of members of the staff. The following was from the Society Editor:

March 27, 1913.

Ed. Hansen, Prop. and Manager, "The Fresno Live Wire," Fresno, California.

Dear Sir:

I hereby resign the honored position of Society Editor of your esteemed paper, commonly known as "The Live Wire." To the present date I have received no salary and would request that you kindly come thru with the copax. I need the bobbies.

I trust that you will give me a good recommendation should you be called upon as to my abilities as a Society Editor. I am sure that you have appreciated my efforts in the behalf of your paper.

Trusting that I will receive check in the next mail and wishing you a "grand success," I beg to remain,

Yours very truly,

GERMEA BARRETT.

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Believing that an explanation was due their subscribers, the publishers of the "Live Wire" prepared the following:

ANNOUNCEMENT!

"Owing to the fact that the 'Live Wire' has been discontinued we would like to make a little announcement. The 'Live Wire' has been a Fearless, Independent, Progressive little paper and we have always tried to publish the best news we could obtain. If the 'Live Wire' has made enemies of any of the employees of the company, we wish to apologize.

"We wish to announce that after this date the 'Live Wire' will appear every month in the Magazine under our own management and all of those desiring to keep in touch with us can do so by subscribing for the Magazine.

Very truly yours,
LEW MARLEY,
Editor.
ED. HANSON,
Prop. and Mgr."

The space allotted the "Live Wire" this month must necessarily be curtailed. The "Live Wire" next month will be a sure enough live one.

For Sale Cheap: Peppery little sheet called the "Live Wire." Declared insolvent but still has some spark. Terms cash. Would accept baseball passes. Apply Printing Department.

Just as Easy—

Dear "Live Wire"—My husband comes home every night unable to walk. What shall I tell him to do? —Loving Wife.

Tell him to order Sarsaparilla.

"My wife and myself are trying to get up a list of club magazines. By taking three you get a discount."

"How are you making out?"

"Well, we can get one that I don't want, and one that she doesn't want, and one that neither wants for $2.25.

Contributed

Cheer up, little "Live Wire,"
Don't you sigh,
You'll be in the Magazine
Bye and Bye.

"You never speculated in corn?" said the Chicago man.

"No," replied Mr. Cumrox; "I got the idea that my luck run that way. Finding a red ear at a husking bee was how I come to get engaged."—Boston Post.

The goose had been carved, and everybody had tasted it. It was excellent. The negro minister, who was the guest of honor, could not restrain his enthusiasm.

"Dat's as fine a goose as I eveh see, Bruddeh Williams," he said to his host. "Whar did you git such a fine goose?"

"Well, now pahson," replied the carver of the good, exhibiting great dignity and reticence, "When you preaches a speshul good sermon, I never axes you whar you got it. I hopes you will show me de same consideration."

"Pa, why must you come into the parlor every evening, like an old crank?"

"I wouldn't have to play the crank if that young man of yours was equipped with a self-starter."

He was filling his first prescription and when he handed it to the lady he told her it was a dollar and ten cents.

She paid the dollar and ten and after she had gone he informed the proprietor that the dollar was counterfeit. The proprietor looked over his glasses at the young man and said:

"Well, how about the ten cents—is that good money?"

The young man answered in the affirmative.

"Oh, well," the proprietor smiled, "that's not so bad—we still make a nickel."

To Our Readers: We'll have some more next month.—Ed. and Lew.

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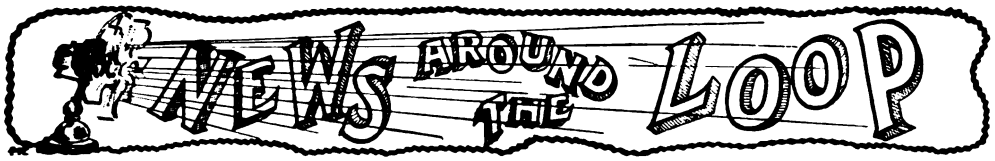

Fresno

Old Bill Stranahan showed himself in the Fresno office several days this month. It was after a long absence and Bill's cheery smile was welcomed by everyone. Bill is now down on the survey of the East 60 line south of Porterville.

C. M. McCardle, agent for the Dinuba district, was in Fresno the early part of the month and after a short visit hurried home to see that everything was kept running in good shape. Charlie is one of the live ones and believes in being on the job all of the time.

Members of the Fresno office force made a good representation at the electric lecture in Selma. They formed a merry automobile party and in a half dozen machines journeyed to and from the southern town. Agent Withers thoughtfully reserved two rows in the center of the house and the visitors from the central office were seated there. Mr. Fagan's lecture was closely followed and proved very interesting as well as instructive. Mr. Fagan sprung a surprise by flashing on the screen a picture of the Fresno office force and the complimented visitors applauded heartily.

Fletcher Easton, formerly a salesman in the Bakersfield district, is now a member of Ernest Newlin's force and is getting well acquainted with the country. He is still somewhat nervous at the wheel of his new Ford car and whenever he sees an auto approaching he feels inclined to stop and let it pass. During a recent rain in Fresno he was run into by a passing machine which skidded, and even though it was no fault of his, Fletcher is still somewhat nervous.

Assistant General Manager Walthall has a good story about some rotten potatoes.

General Agent E. D. Farrow, Jr., returned to Fresno after an absence of six weeks on the coast where he was investigating new business. His car was submitted to a general overhauling and after a stay of almost two weeks in the valley, Farrow has returned to the coast.

L. W. Stahl of Los Angeles has joined the San Joaquin Light and Power family and is now seeing service behind the customers counter.

F. O. Alton, local representative of the small motor department of the General Electric Company, had the misfortune to break his right arm while cranking his automobile in Hanford the latter part of March. He was compelled to return to San Francisco and was absent from his territory for a month. He is again on the job but it will be some time yet before he will be in a position to turn over his auto engine with the injured member.

Jack Van Huysen, the transformer expert of the General Electric Company, seems to have a penchant for nifty headgear. He has forsaken one of the classy "Broadway Jones's" for a nifty salt and pepper crusher effect creation. What's the next, Jack?

Emil Newman came down from North Fork last week on business connected with the increase in the working force on the No. 2 plant.

D. L. Wishon, engineer in charge of the work on Tule River, and Purchasing Agent J. H. Newlin made a trip to San Francisco a week or so ago. A pretty good pair to turn loose in a big city.

A. D. Fishel, a transformer expert for the Westinghouse Company, spent almost a month in Fresno in March and April and returned to his headquarters in Pittsburg April 8. This was Mr. Fishel's first trip to the coast and he took a great interest in the territory he visited.

The Fresno force was introduced to

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The Vindication of Harry Kern

Harry was emphatic in his declaration that the photo in the last issue was not of him. The burden of the proof, however, rested with Harry. Has he made good? Ask Wesley Mann for the verdict. Do not try to erase the blot in order to find out who the young lady is. It will not erase.

Mr. J. T. Ryan early this month. Mr. Ryan is an engineer for the J. G. White Engineering Corporation, and he does not belie his looks—he surely can place his feet under the dining table and give a good account of himself. Mr. Ryan accompanied General Agent Farrow and Billy Stranahan from the coast to Fresno, inspecting the company properties along the way. The trio must have enjoyed themselves immensely, particularly Stranahan and Farrow, for they with difficulty kept a straight face when telling of Mr. Ryan's introduction to life on the San Joaquin Light and Power system. Farrow and Stranahan, when they get started, do not let a little thing like a meal interfere with their journey, and their persistence in passing by perfectly inviting farm houses at noon time was more than Mr. Ryan could account for. Hence the laughter.

Murry Herriman of the Mechanical Installation Company was in the valley on business this month.

Our Vice-President, A. C. Balch, was up from Los Angeles early this month.

General Superintendent Peart and Assistant Superintendent Burgess spent considerable time on the coast the latter part of March cutting in San Luis Obispo.

The baseball bug is alive and it has bit the Fresno office with force. Eddie Hanson has had his aggregation of tossers out for practice several times already and the exponents of the horsehide are looking forward to an encounter with the nine from the P. G. and E. A dinner is to be the stakes. The San Joaquin boys are a speedy lot and some real ball players are included in their list. Eddie Hanson will do the heavy work in the twirler's box and what he lacks in size he makes up in pitching ability. John Sweeney will be on the receiving end and he shows some class there, too. Bill Leavitt, who was playing ball when most of the fellows were still in their swaddling clothes, will be on first and, although he is somewhat rotund in midsection, he steps around the bag like a second Hal Chase. Lew Marley will be depended upon to guard the keystone sack, and Vic Wallace will play short. "Spike" Cutter will be on the difficult corner and he handles himself like a real guardian of the third station. Charlie Rawlins is in left and will be death to everything that comes his way. Porter Simpson and Carl Stockholm will show pepper all right when it comes to carrying a baseball bat instead of the mail. Paul Ashley will be the all-around player to fill the vacancy in case the umpire happens to be a better man than one of our players. Sweeney has formed a stock company to supply the team with balls but it is not probable that the investors will ever receive a dividend, as the last time there was a surplus John bought a dish of noodles.

E. Cameron of the Electric Agencies

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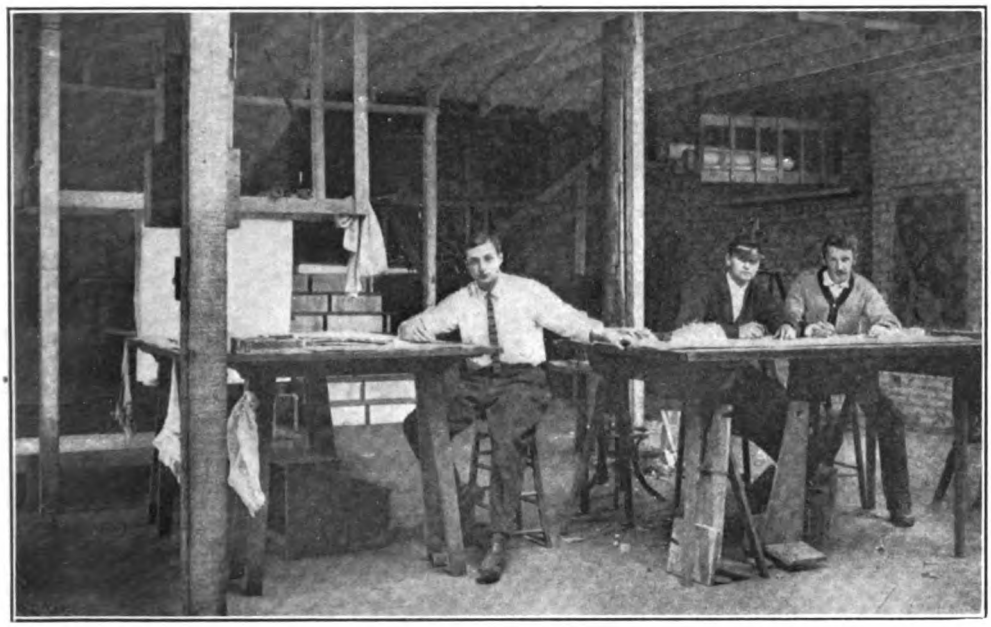
Company came down from San Francisco last week on business.

W. R. Wheaton was over from San Miguel earlier in the month.

E. A. Van Buren graciously did the act. Monday, March 31, he went about the office and in a matter of fact way distributed cigars just as though it were no new experience for him. Everybody, however, had heard the good news and the reports that Baby Van Buren and her mother were doing nicely were received with much satisfaction. All of the girls in the office seemed to be as proud of the baby as

home, 469 Abby street in Fresno. Dr. J. W. Conley of the Baptist Church performed the ceremony, which was witnessed only by immediate friends owing to illness in the family of the bride. Miss Mary Waldon of Bakersfield attended the bride and Mr. J. C. Dawson of Fresno stood with the groom. Before her marriage Mrs. Mason was Miss Rosa Adams of Bakersfield. It was while on the new construction work in Bakersfield that Mr. Mason met his bride. The happy couple are comfortably domiciled and their many friends throughout the



The Draughting Department; Reading from Left to Right, Herold Morton, Designer of the Company Emblem; Ray Beuthel, now Resigned, and Guy O'Melveny, in Charge of the Department

if she were in their own household and they presented the little lady with a handsome silver dinner bowl. Van says that the little girl has not caused him any midnight marathons as yet. And Ruthie is now an auntie.

Dave Mason surprised the office when he returned to his desk, the last week in March, after a few days lay off, with the announcement that he was now a benedict. The happy event took place March 19 at Mr. Mason's

system join in wishing them all of the happiness possible.

The draughting department regrets to lose the services of Guy Beuthel, who resigned to accept a more responsible position in the local office of the Stone & Webster Construction Company. Beuthel was with the company for a year and a half and became a very popular employee. The draughting department, in its new headquarters at the sub-station, has better

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facilities for work than any time in its history. The space allotted it is large, roomy and airy, the light is excellent, spacious washing and drying trays have been built and a fine printing platform has been constructed on the roof. Mr. O'Melveny and his assistants are more than pleased with their new home.

Auditor C. P. Staal has forsaken his little Studebaker roadster for a car of the same make but of the touring type. He likes the larger vehicle better and is now handling it like a real old timer.

F. S. Upson has joined the Fresno district force and will pay particular attention to new lighting business.

Tom Collins and Louie Somers of the Westinghouse staff were frequent visitors in Fresno during April.

The ranks of the auto owners were swelled this month by Assistant Secretary W. E. Durfey, who is the proud possessor of one of the larger touring types of the Studebaker car.

Bakersfield

General Agent E. D. Farrow, Jr., paid the Bakersfield district a visit earlier in the month.

Electrical Superintendent Easton has spent a great deal of time in the Midway oilfields placing the new compressor plant on the California Midway Oil Company in operation.

A line has just been completed to Shafter to furnish light and power for the new colony now being launched by the Kern County Land Company. An attractive hotel has been built, a water service installed, streets and sidewalks laid out and within a short time a great deal of activity is expected there.

Billy Wallace of Salinas has accepted a position in the consumers department. He is a thorough office man and will make the company a valuable employee.

The continued growth of Kern county is making a heavy demand upon the company for power and the construction crews are busily engaged in extending distribution lines in the agricultural districts surrounding Bakersfield.

Superintendent J. F. Turner of the railway department is having a busy time this month with the opening of the baseball season and the wonderful new automobile race track. The full capacity of the street car service was taxed on these occasions.

Tom Curtin and his crew have been ordered back to the Famosa sub-station after completing the work on the California Midway compressor plant.

Ross L. Douglas, the lighting expert of the Fresno district, paid Bakersfield a visit during the month to investigate conditions at this end of the valley.

Bob Carlisle has been making some long automobile trips and early in the month was away for several days driving over the Midway hills.

Jack Carter, district agent at Taft, favored the Bakersfield office force with a visit during the month and enjoyed some of Mrs. Charlie Easton's culinary accomplishments. Mrs. Carter is some cook herself, so Charlie gets even when he goes to Taft.

Coalinga

The 150 horsepower motor and air compressor on the property of the M. K. & T. Oil Co. was put in operation on April 3rd and is giving satisfaction.

The Standard Oil Co., section 28, is installing a 15 horsepower motor on an ice machine to furnish ice to their various camps in the field.

The R. H. Herron Co. have installed a 30 horsepower motor to operate their machine shop.

Max Scott, superintendent of the Zier Oil Co., has been transferred to Taft, and W. Redman has been appointed superintendent of the Zier properties.

Dick Lipscomb of Visalia has been appointed chief clerk in the Coalinga office to fill the position vacated by Geo. Blake.

Vic Kimmick has taken Jack Quiett's place as storekeeper in the Coalinga office.

Work is being rushed to complete the three and one-half mile extension to the Continental Oil Co., to serve seven motors on that lease.

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Looking at Jack Carter Through a Joint of Huge Oil Well Casing

This will give you a good idea of what electricity is being called upon to do in the oil fields. This is a photograph of Jack Carter, the popular district agent at Taft in the Midway oil fields, taken through a joint of oil well casing twenty inches in diameter and twenty feet long. It is the largest casing in use in the oil fields and is being put down in the Kern Trading and Oil Company well near Maripoca being drilled by electricity.

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Selma

The Selma office force played the role of host in a highly accomplished and artistic manner the evening the lecture on electricity was given.

District Agent Withers made several trips into Fresno during the month.

A new safe has been installed in the office.

The rapid growth of Selma and the surrounding territory is making increased demands for electric service both for domestic and agricultural purposes.

Mr. Frank B. Howard of Selma is one of the latest to adopt the electric motor, contracting for a three horse power motor for pumping purposes.

The extension of the line on the South McCall road has been completed and power is now being served several customers along the route. Authorization has been received to build a five mile extension eastward from Laton and the construction crew has the work well under way.

Considerable improvement is being made in the gas works. A new engine and blower is being installed, making both steam and electric power available. The gas mains on C street have been extended from Stillman street to Gaither and an extension has been made along B street. Many additions in water mains are also planned.

Earl McCrory, who was in the Selma district for some time in the capacity of foreman of the construction crew, is now doing good work in the Merced district.

E. S. Erwin of the auditing department was in Selma during the month.

S. W. Hall, formerly of Kingsburg, is now the official trouble shooter in the Selma district.

Corcoran

Agent R. L. Beardon has been having a busy time of it as the success of the electric pumping plant in the southern end of the valley makes a big demand upon him for extensions and new installations.

Jim Stokes, the foreman in charge of construction, is working more than twenty men and they are keeping exceptionally busy getting lines to new pumping plants.

Wm. Starrett, formerly office assistant to Mr. Beardon, has resigned.

Paul Wilson, agent for the Stoil district, passed through Corcoran last Saturday night on his way to Hanford.

McFarland

G. W. Randall is putting in a 7½ horsepower and a 10 horsepower electric plant on his property near McFarland.

J. J. Van Slack is having a direct connected electric pumping plant, 20 horsepower capacity, installed on his property west of Wasco.

Knight & Sullivan of Rio Bravo have installed a 20 horsepower gas engine pumping plant on property in the Rio Bravo district.

Agent O. A. Walthall misses his little bob-tailed dog Charlie. Charlie met his doom under the wheels of an automobile several weeks ago.

Coast Counties

The new sub-station at San Luis Obispo has been completed, and is now in operation.

Tests on the high line into San Luis Obispo were made the last week in March and the line is in shape to be "hotted up" at any minute, but at the present time the San Miguel plant is supplying the town of San Luis.

Poles for the main line have been erected to Santa Maria and the line gang will have completed the work of stringing the wires by the end of the month, thus completing the high line construction.

The 10,000 volt line from San Luis Obispo to Arroyo Grande has been completed.

Construction work on the Jolon extension, from San Miguel west to Jolon, has been begun and is progressing rapidly. This line will open up a very fertile and rich agricultural district and as soon as pumping plants are in operation will make a decided change in the appearance of the district.

Work will be under way the first

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part of the month on the distribution lines to supply the Santa Maria oil-fields with power. On account of the great interest oil men are now taking in the electric drive operation, many oil companies on the coast have arranged to adopt the electric drive.

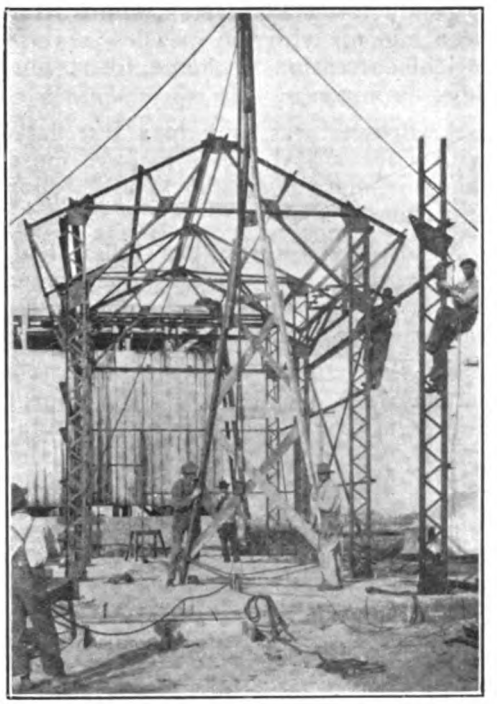
Five miles of line from Santa Maria to the rock crusher has been completed.

San Luis Obispo has been the scene of much activity in rebuilding the distribution lines in the city.

Jack Burgess, superintendent of construction, arrived on the coast from Fresno the middle of the month to supervise the work under way.

A system of electric pumping is to be installed on the big Coburn Ranch near King City.

The Golden Eagle Creamery, one of the best known plants in the Guadalupe country, has adopted electricity and is installing one of the most complete electric plants on the coast. Electricity will be used entirely in the operation of the plant.



Construction Crew on the New Santa Maria Sub-Station. Mark Webster in Charge.

With the Street Car Boys at Bakersfield

Motorman Clarence Nelson and Conductor Asa Clark are looking forward with much pleasure to their contemplated trip during their vacation. Mr. Nelson will take his family along and Asa expects to hunt large game while Clarence will take care of the small game, look after the camp and direct the delivery of the larger game captured by Clark, who says he does not care to spend his time hunting anything but big ferocious animals.

Motorman Andy Anderson took the day off April 1st to look after his real estate interests. Andy believes in making hay while the sun shines and he is preparing for a rainy day.

Motorman F. Weigan has been assisting the Mechanical Department for a few days. Fred helped to equip the new cars when they arrived in Bakersfield and is on to his job.

Motorman James Moore would like to meet the parties who have taken an interest in his capability in his different vocations and also states that he would rather be known as "Happy Jim" than "Cranky Jim."

Motorman Sam Crissman and Emory Garrett are assisting Inspector J. O. Arnold on the owl run in their turn as they are the oldest night men in seniority.

Motorman J. Nerton announces that there is nothing doing in regard to the report in the last issue. "No wedding bells for John."

J. LaChance took a day off April 2nd and celebrated his 29th birthday.

Motorman Sanford is enjoying life in his new home on Union avenue.

R. McCrary and R. Martin have Chester avenue run No. 3 for April.

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Conductor E. Garrett's family has been laid up with the measles, requiring his attention at home for a few days as nurse.

A. Brower was laid up a few days with a fever. Al seems to have more than his share of bad luck on account of sickness.

Motorman Johnson has fallen heir to a regular run on Chester avenue line in Motorman Gulley's place, who has resigned to take a position on the police force.

Motormen J. Moore, P. Washburn, and R. Garner are making arrangements to attend the log rolling of the W. O. W. lodge, of which order they are members, to be held in Fresno.

Conductor R. Martin and wife have returned from the East where they were called on account of the sickness of Mr. Martin's mother. All were glad to hear of her recovery. Martin says Bakersfield looks good to him and was glad to get back.

Master Mechanic Mickelberry has moved to the modern cottage on Grove street recently vacated by Motorman Sanford and is comfortably domiciled for the summer.

Night Foreman Ruggles has artistically rewritten the cards for the running board. Ruggles is certainly gifted as a penman and artist. Anyone wishing any neatly arranged cards will make no mistake by calling on him before placing orders.

Brings $400 an Acre

J. W. Loveley and son have sold their 80-acre tract near Fowler for $32,000, or $400 per acre, to K. E. Garbossian. The land has 45 acres in vines, 28 in fruit trees, and 7 in alfalfa, and other improvements. The adjoining 80 acres sold three years ago for $24,000.

Tree Planting Campaign To Beautify Los Banos

The town improvement committee of the enterprising Los Banos chamber of commerce is busily engaged in setting out 500 black acacia trees on two of the principal residence streets of the city. It is arranged that the property owner shall pay for the trees planted in front of his property at the wholesale price, the chamber of commerce shall bear the expense of planting and the city shall see that the young trees shall not suffer for water. The local chamber of commerce have laid out a systematic plan whereby two residence streets shall be planted each year to suitable shade and ornamental trees. The plan has met with universal endorsement.

Statistics of Fresno County

Andrew J. Sturtevant, Jr., a graduate of the U. of C. College of Agriculture, has been appointed by Robert N. Lynch, manager of the California Development Board, to gather statistics in regard to crops, soil, irrigation facilities and requirements, covering every part of Fresno county. This work will be done under the direction of the Board of Supervisors, and will be continued until practically every tract of tillable land in the county is included in the report.

Big Stock and Alfalfa Ranch for Kings County

One of the largest real estate deals of the year has just been made in Kings county with the purchase of the big Santa Paula Rancho Tract, consisting of 3,179 acres, by L. H. Durant. The tract has been on the market in eighty and forty-acre lots, but Mr. Durant and C. E. Rees, who is interested with him, will take it off the market and convert it into an extensive stock and alfalfa ranch, where they will raise fine horses, cattle and hogs.

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Big Dairy Project Interests Kern Dairymen

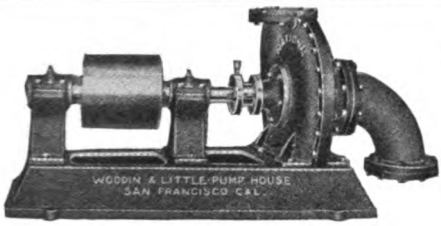
A matter of a good deal of interest to dairymen in parts of Kern county is maturing in the shape of a new creamery to be controlled by a stock company of dairymen.

W. H. McKittrick, a wealthy land and cattle owner, proposes to put in $125 for every $100 put in by other dairymen, and to limit the profits of the business to seven per cent on the paid up stock.

The creamery will be located in Bakersfield, will sell sweet cream and be a nucleus for the buying and selling of dairy cattle, veal and hogs.

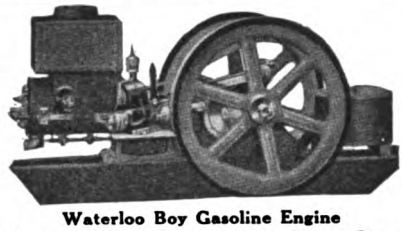
Through this new arrangement the dairymen expect to get four cents above Los Angeles quotations for butter fat and to have the profits of the sweet cream trade.

Bakersfield business men have volunteered to take all the butter and advance the necessary capital at seven per cent.



National Centrifugal Pump

PUMPS



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These Are the Men

Who Represent Us in the Eighteen Districts of Our System

Merced ..... R. Casad
Madera ..... G. W. Bernhard
Los Banos ..... W. E. Whittington
Fresno ..... M. E. Newlin
Selma ..... L. B. Withers
Dinuba ..... C. M. McCardle
Caruthers ..... Frank Ridge
Corcoran ..... R. L. Bearden
Bakersfield ..... Harry A. Jastro
Bakersfield (Suburban) ..... W. A. Purcell
McFarland ..... O. A. Walthall
Stoil ..... Paul B. Wilson
Taft ..... J. B. Carter
Coalinga ..... F. V. Boller
Lemoore ..... B. K. Jones
Paso Robles ..... K. B. Glass
San Luis Obispo ..... G. L. Howard
Santa Maria ..... A. M. Frost

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